IEI Technology Corp.

MODEL:

# AFL-4 Series-N270

**In-wall Panel PC with Touch Screen and Intel® Atom™ CPU Gigabit Ethernet, Five USB, Audio, RS-232/422/485, RoHS Compliant, IP64 Protection**

# User Manual

**Rev. 1.05 16 November, 2009**

RoHS Lead Free

# Revision

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# Packing List

**NOTE:**

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the AFL-4 Series-N270 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the AFL-4 Series-N270 package.

- 1 x AFL-4 Series-N270 flat panel PC
- 1 x Power adapter
- 1 x Power cord
- 1 x Screw kit
- 1 x SATA and power cable
- 1 x User manual CD and driver CD
- 1 x Remote control
- 1 x Touch pen

Images of the above items are shown in **Chapter 3** on **page 39**.

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Chapter

1

# Introduction

# AFL-4 Series-N270 Flat Panel PC Overview

**Figure 1-1: AFL-4 Series-N270 Flat Panel PC**

The AFL-4 Series-N270 models are Intel® Atom™ powered flat panel PCs with a rich variety of functions and peripherals. All AFL-4 Series-N270 models are designed for easy and simplified integration into conference center, home automation, and building control applications.

An Intel® 945GSE graphics memory controller hub (GMCH) coupled with an Intel® ICH7M input/output controller hub ensures optimal memory, graphics, and peripheral I/O support. The system comes with 1.0 GB of preinstalled DDR2 SDRAM and supports a maximum of 2.0 GB of DDR2 SDRAM ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Two serial ports and two external USB 2.0 ports ensure simplified connectivity to a variety of external peripheral devices. Wi-Fi capabilities and an RJ-45 Ethernet connector ensure smooth connection of the system to an external LAN.

## 1.1.1 Features

There are six models in the AFL-4 Series-N270 and models feature the following:

- Intel® Atom™ processor
- Intel® 945GSE chipset
- 1GB 533 MHz DDR2 SDRAM preinstalled
- 802.11 b/g wireless module
- Five USB 2.0 ports
- Watchdog timer that triggers a system reset if the system hangs for some reason
- IP 64 compliant front panel
- AT or ATX power mode
- Touch screen
- Bluetooth (not available on the AFL-408B and AFL-W410A)
- RoHS compliance

### 1.1.2 Applications

The AFL-4 Series-N270 panel PC models are elegant yet sophisticated systems that are as easily implemented in commercial, industrial, and corporate environments as the home.

## 1.2 External Overview

The stylish AFL-4 Series-N270 panel PC comprises of a screen, rear panel, top panel, bottom panel and two side panels (left and right). An ABS/PC plastic front frame surrounds the front screen. The rear panel provides screw holes for a wall-mounting bracket compliant with VESA FDMI standard. An I/O interface panel on the bottom panel of the AFL-4 Series-N270 provides access to external interface connectors that include LAN, USB 2.0, serial port, reset button, power connector and power switch.

### 1.2.1 Front Panel

The front side of the AFL-4 Series-N270 is a flat panel TFT LCD screen surrounded by an ABS/PC plastic frame. The top of the front panel has a digital camera and microphones. The bottom has stereo speakers, an ambient light sensor and IR remote sensor. The front panel also includes one USB 2.0 port. Refer to **Figure 1-2**.

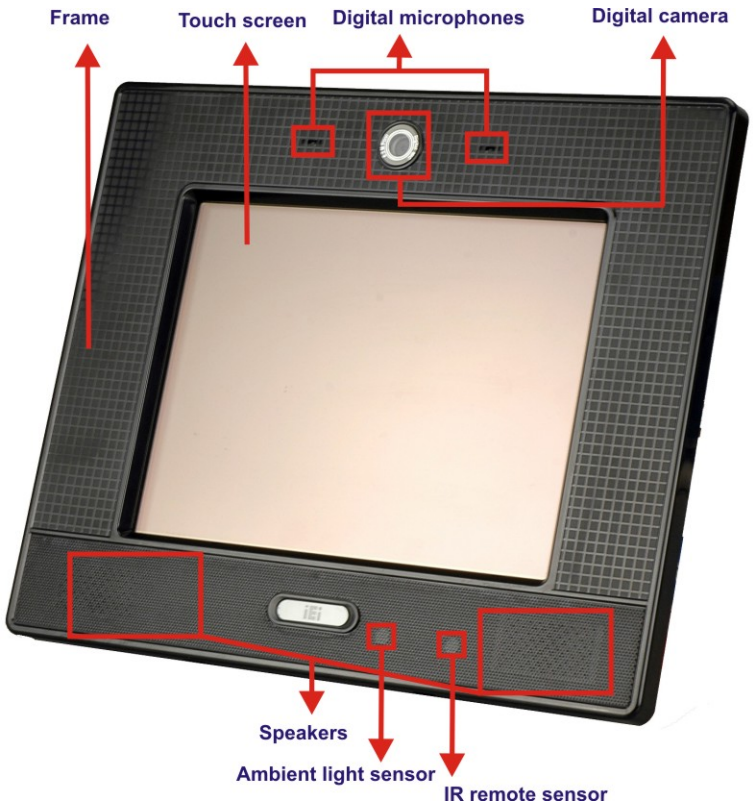



**Figure 1-2: AFL-4 Series-N270 Front View**

### 1.2.2 Rear Panel

The rear panel provides access to the internal components of the AFL-4 Series-N270 and CF card slot. Refer to **Figure 1-3** for back cover retention screw, VESA mount screw holes and CompactFlash® slot locations.

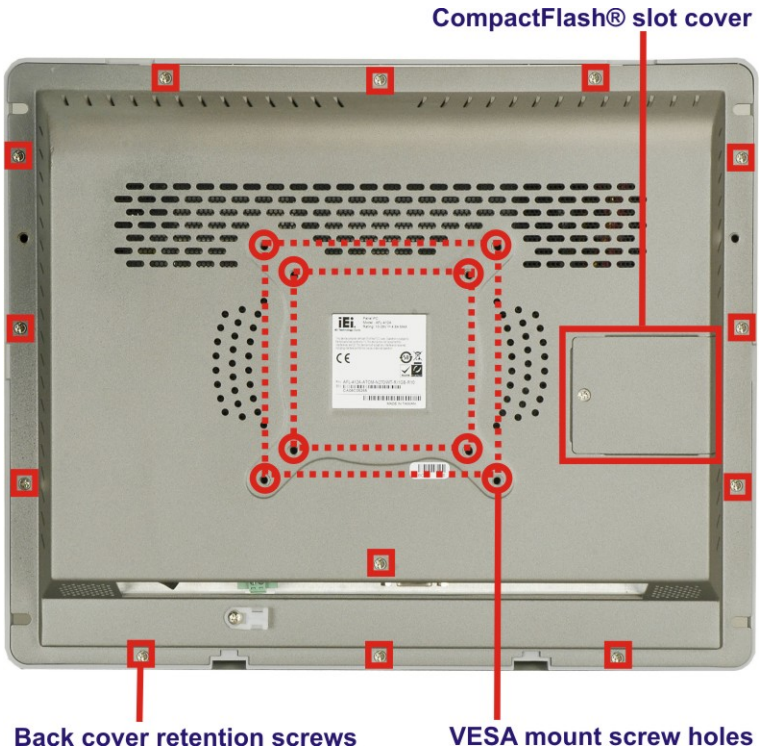



**Figure 1-3: AFL-4 Series-N270 Rear View**

### 1.2.3 I/O Interface Panel

The I/O interface panel located on the bottom of the AFL-4 Series-N270 has the following I/O interface connectors:

- 1 x 12 V DC-IN connector
- 1 x Audio connector
- 1 x DC-IN terminal block
- 1 x LAN connectors
- 1 x Power switch
- 1 x Reset button
- 1 x RJ-12 (12 V DC) for cash drawer
- 1 x RS-232 connector by RJ-45
- 1 x RS-232/422/485 connector by RJ-45
- 1 x VGA port
- 4 x USB 2.0 connectors
- 1 x AT/ATX mode select

The external I/O interface connector panel is shown in **Figure 1-5**.

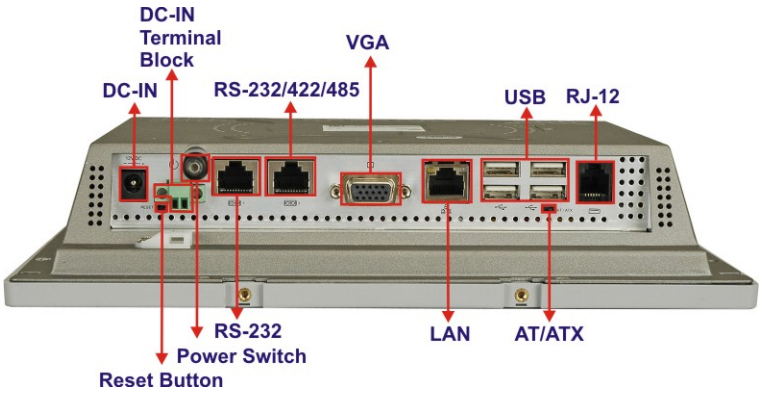



**Figure 1-4: AFL-408A/B-N270 I/O Interface Connector Panel**

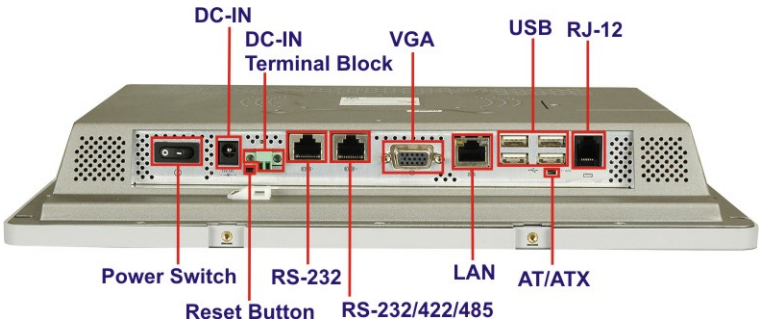



**Figure 1-5: AFL-412A-N270 I/O Interface Connector Panel**

## 1.3 Internal Overview

The AFL-4 Series-N270 has the following components installed internally:

- 1 x Motherboard
- 1 x 1.0 GB 533 MHz DDR2 SDRAM SO-DIMM
- 1 x Wireless module
- 1 x Bluetooth module (not available on the AFL-408B and AFL-W410A)

## 1.4 System Specifications

The technical specifications for the AFL-4 Series-N270 systems are listed below in **Table 1-1.**

| Specifications | AFL-408A-N270 | AFL-408B-N270 | AFL-W410A-N270 | AFL-412A-N270 | AFL-415A-N270 | AFL-415AE-N270 |
|---|---|---|---|---|---|---|
| LCD Size | 8.4" | 8.0" | 10.2" | 12.1" | 15" | 15" |
| Max Resolution | 800 x 600 | 800 x 600 | 1024 x 600 | 1024 x 768 | 1024 x 768 | 1024 x 768 |
| Brightness (cd/m2) | 400 | 300 | 400 | 400 | 350 | 250 |
| Contrast Ratio | 400:1 | 400:1 | 400:1 | 500:1 | 700:1 | 600:1 |
| LCD Color | 262K | 262K | 262K | 262K | 262K | 262K |
| Pixel Pitch (mm) | 0.213(H) x 0.213(V) | 0.0675(H) x 02025(V) | 0.2175(H) x 0.2175(V) | 0.240(H) x 0.240(V) | 0.297(H) x 0.297(V) | 0.297(H) x 0.297(V) |
| Viewing Angle (H-V) | 120/100 | 130/120 | 140/110 | 120/100 | 140/125 | 160/160 |
| Backlight MTBF | 50000 hrs | 30000 hrs | 40000 hrs | 60000 hrs | 50000 hrs | 50000 hrs |
| SBC Model | AFLMB4-945GSE-N270-R10 | | | | | |
| CPU | Intel® Atom N270 1.6GHz CPU | | | | | |
| Chipset | Intel 945GSE + ICH7M | | | | | |
| RAM | Supports one 400MHz or 533MHz DDR2 SO-DIMM (2GB Max.) | | | | | |
| I/O Ports and Switches | One DC-IN terminal block<br>One Power jack<br>Two Power switches<br>One Reset button<br>One RJ-12 (12V DC) for Cash Drawer<br>One RJ-45 for Giga LAN<br>One RJ-45 port for RS-232<br>One RJ-45 port for RS-232/422/485<br>Four USB 2.0 ports, bottom panel<br>One USB 2.0 port, front panel<br>One VGA port | | | | | |

| Specifications | AFL-408A-N270 | AFL-408B-N270 | AFL-W410A-N270 | AFL-412A-N270 | AFL-415A-N270 | AFL-415AE-N270 |
|---|---|---|---|---|---|---|
| SSD | CF Type II | | | | | |
| Watchdog Timer | Software programmable supports 1~255 sec. System reset | | | | | |
| Audio | AMP 1.5W + 1.5W internal speakers | | | | | |
| Digital Camera (300K pixel) with microphone | Yes | N/A | N/A | Yes | Yes | Yes |
| Wireless LAN | Wireless LAN 802.11 b/g | | | | | |
| Bluetooth V2.0 | Yes | N/A | N/A | Yes | Yes | Yes |
| HDD Drive Bay | N/A | | | 1 x 2.5" SATA HDD bay or Option HSDPA Module | | |
| HSDPA Mobile Solution | N/A | | | 1 x HSDPA Mobile Module (USB Interface) (optional) | | |
| Construction Material | ABS + PC Plastic front frame | | | | | |
| LED Function | One Power ON/OFF LED on Front Panel | | | | | |
| Mounting | Panel, Wall, Arm, Stand (VESA 75mm x 75mm / 100mm x 100mm) | | | | | |
| Front Panel Color | Black (Black U), White (Apple white), Gray (422C) | | | | | |
| Dimension (W x H x D mm) | 263.2 x 221.2 x 54.4 | 263.2 x 221.2 x 54.4 | 313.83 x 222.13 x 52.5 | 339 x 276 x 51.6 | 385.7 x 330.7 x 55.5 | 385.7 x 330.7 x 55.5 |
| Operation Temperature (ºC) | -10ºC~50ºC | | | 0ºC~40ºC with 2.5" SATA HDD<br>-10 ºC~50ºC with CF Card or SATA interface 2.5" SSD HDD | | |
| Storage Temperature (ºC) | -20ºC~60ºC | | | | | |
| Net Weight | 0.8 Kg | 0.8 Kg | TBD | 1.8 Kg | TBD | TBD |

| Specifications | AFL-408A-N270 | AFL-408B-N270 | AFL-W410A-N270 | AFL-412A-N270 | AFL-415A-N270 | AFL-415AE-N270 |
|---|---|---|---|---|---|---|
| IP Level | IP64 | IP64 | IP64 | IP64 | IP64 | IP64 |
| EMC | CE, FCC, CCC | CE, FCC, CCC | CE, FCC, CCC | CE, FCC, CCC | CE, FCC, CCC | CE, FCC, CCC |
| Safety | CB | CB | CB | CB | CB | CB |
| Touch Screen | Resistive 4-Wire | Resistive 5-Wire | | | | |
| Power Adapter | 40W Power Adapter 90VAC~264VAC, 50/60Hz, 12VDC | | | 48W Power Adapter 90VAC~264VAC, 50/60Hz, 12VDC | 60W Power Adapter 90VAC~264VAC, 50/60Hz, 12VDC | |
| Power Requirement | 12VDC or 10~28VDC | | | | | |
| Power Consumption | 36W | 32W | 39W | 43W | 49W | 49W |

**Table 1-1: AFL-4 Series-N270 Specifications**

Chapter

2

# Detailed Specifications

## 2.1 Dimensions

The following sections provide detailed schematics and information on the dimensions of the AFL-4 Series-N270.

### 2.1.1 AFL-408A/B-N270 Dimensions

The AFL-408A/B-N270 dimensions are shown in **Figure 2-1** and listed below.

- **Width**: 263.20 mm
- **Height**: 221.20 mm
- **Depth**: 54.40 mm

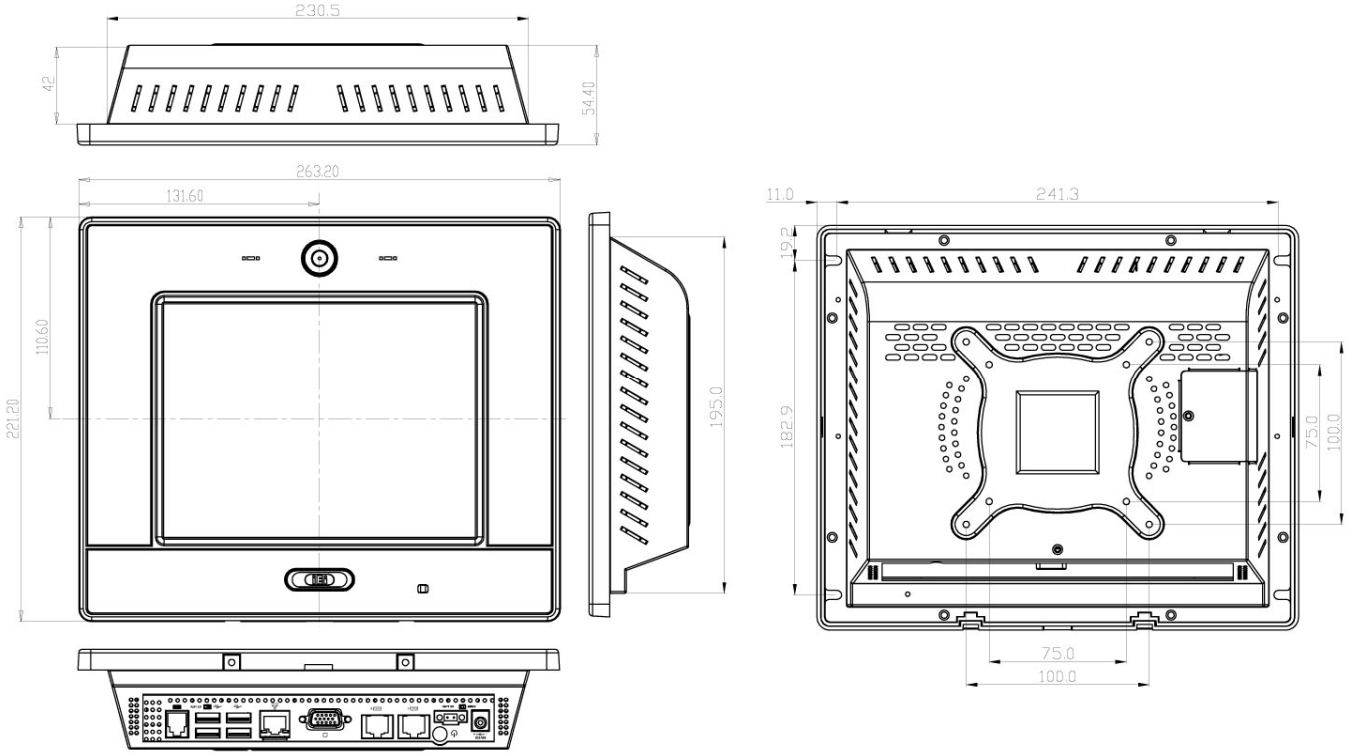



**Figure 2-1: AFL-408A/B-N270 Dimensions (mm)**

### 2.1.2 AFL-W410A-N270 Dimensions

The AFL-W410A-N270 dimensions are shown in **Figure 2-1** and listed below.

- **Width**: 313.83 mm
- **Height**: 222..13 mm
- **Depth**: 52.50 mm

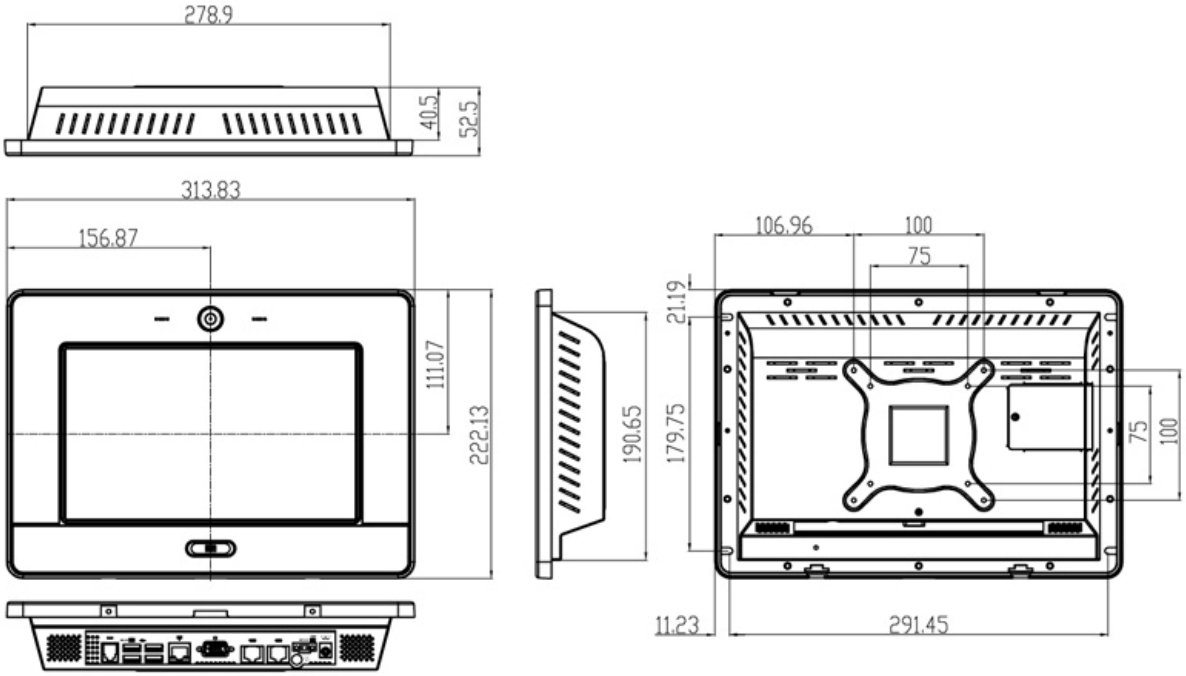



**Figure 2-2: AFL-W410A-N270 Dimensions (mm)**

### 2.1.3 AFL-412A-N270 Dimensions

The AFL-412A-N270 dimensions are shown in and listed below.

- **Width**: 339.0 mm
- **Height**: 276.0 mm
- **Depth**: 51.6 mm

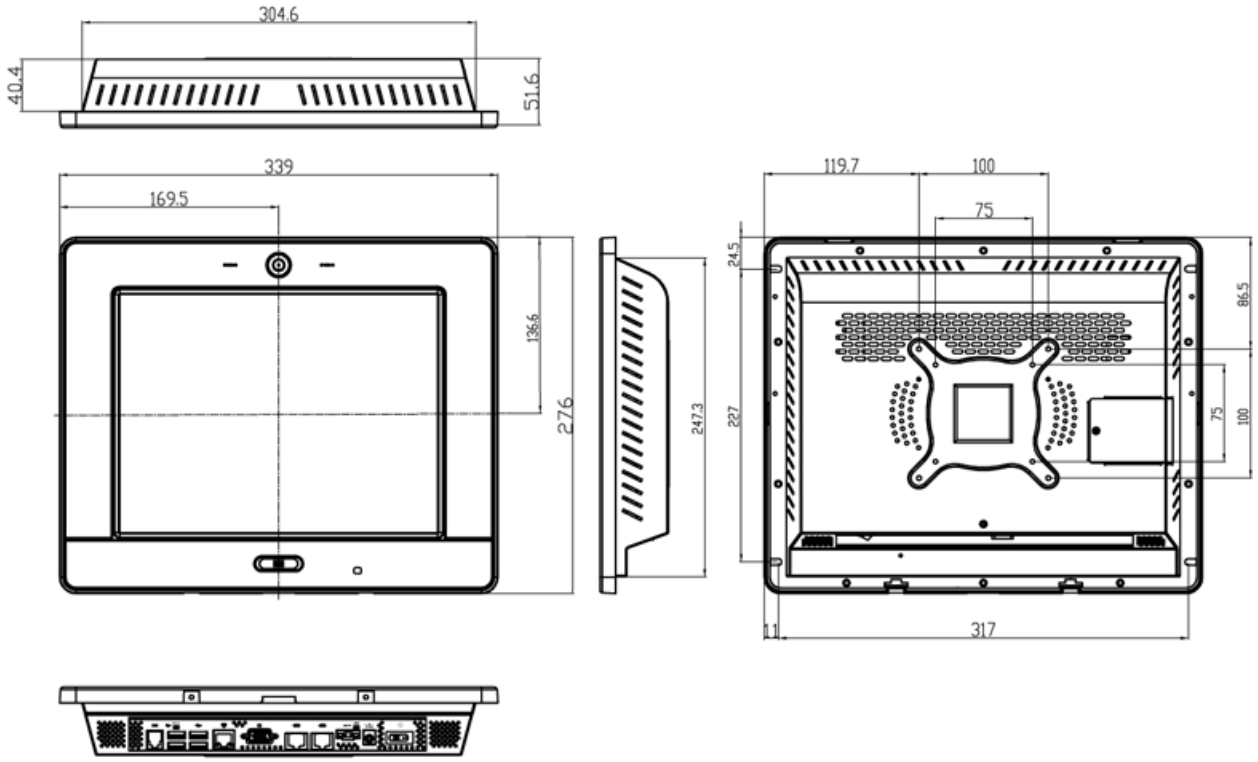



**Figure 2-3: AFL-412A-N270 Dimensions (mm)**

### 2.1.4 AFL-415A/AE-N270 Dimensions

The AFL-415A/AE-N270 dimensions are shown in **Figure 2-1** and listed below.

- **Width**: 385.70 mm
- **Height**: 330.70 mm
- **Depth**: 55.50 mm

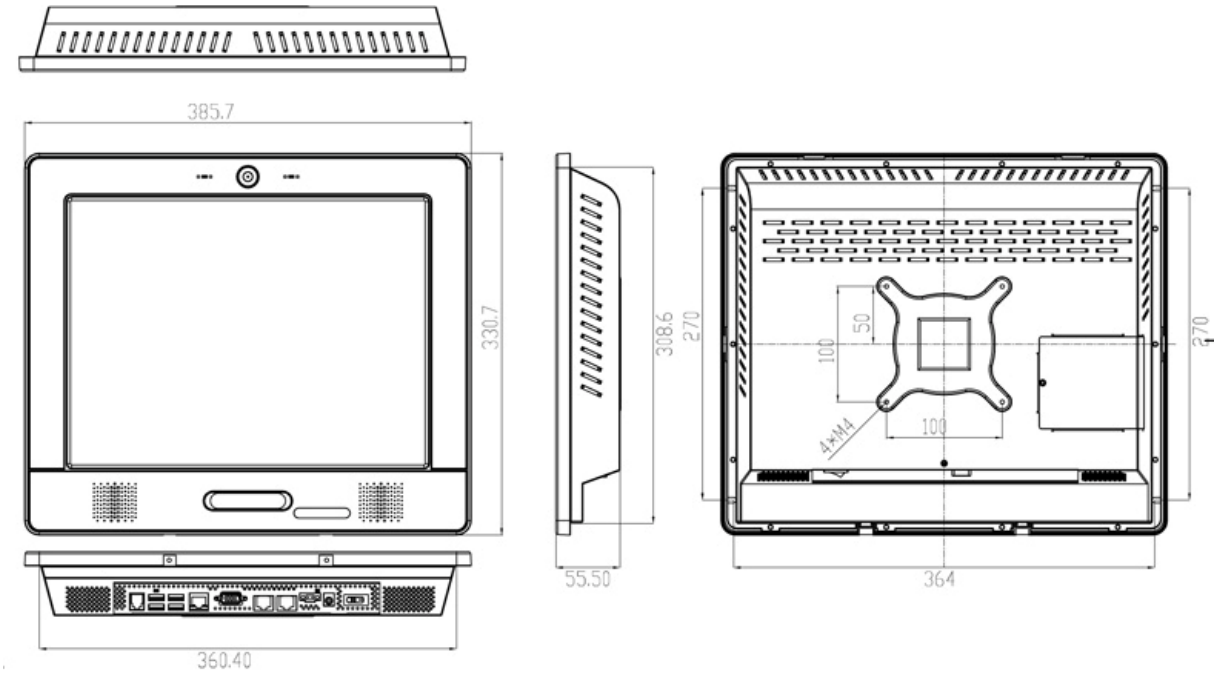



**Figure 2-4: AFL-415A/AE-N270 Dimensions (mm)**

## 2.2 Intel® Atom™ Processor

A 45nm N270 Intel® Atom™ processor is installed in the system. The processor has a CPU speed of 1.6 GHz and a 533 MHz front side bus (FSB). The processor also comes with a 512 KB L2 cache and a 1.6 GHz L2 cache speed. Some of the features of the Intel® Atom™ processor N270 are listed below:

- On-die, primary 32-KB instructions cache and 24-KB write-back data cache
- 533-MHz source-synchronous front side bus (FSB)
- 2-Threads support
- On-die 512-KB, 8-way L2 cache
- Support for IA 32-bit architecture
- Intel® Streaming SIMD Extensions-2 and -3 (Intel® SSE2 and Intel® SSE3) support and Supplemental Streaming SIMD Extension 3 (SSSE3) support
- Micro-FCBGA8 packaging technologies
- Thermal management support via Intel® Thermal Monitor 1 and Intel Thermal Monitor 2
- FSB Lane Reversal for flexible routing

- Supports C0/C1(e)/C2(e)/C4(e)
- L2 Dynamic Cache Sizing
- Advanced power management features including Enhanced Intel SpeedStep® Technology
- Execute Disable Bit support for enhanced security

## 2.3 Motherboard Components

The following sections describe some of the features on the motherboard.

### 2.3.1 Memory Support

One 200-pin 1.0 GB 533 MHz DDR2 SDRAM SO-DIMM is installed in the AFL-4 Series-N270 and controlled by the Intel® 945GSE GMCH installed on the internal motherboard.

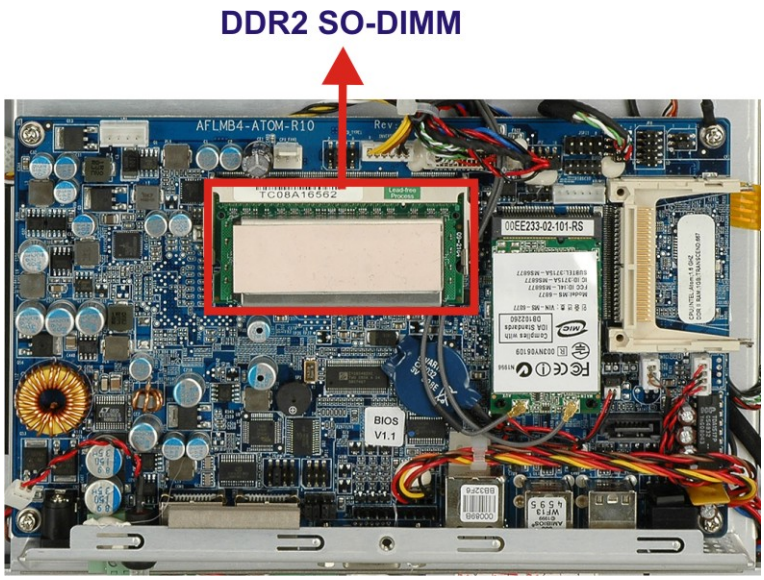



**Figure 2-5: Preinstalled DDR2 SO-DIMM**

#### 2.3.1.1 Additional Memory

The Intel® 945GSE is capable of supporting one 200-pin 2.0 GB (max.) 533 MHz or 400 MHz DDR2 SDRAM SO-DIMM. If additional memory is required, please contact an IEI sales representative and discuss the necessary system requirement.

### 2.3.2 Storage Capacity

The AFL-4 Series-N270 supports an easily installed CompactFlash® Type II (CF Type II) memory disk. The AFL-412A, AFL-415A, and AFL-415AE-N270 models can also support either an internal 2.5” SATA hard disk drive or a HSDPA module.

## 2.4 AFL-4 Series-N270 Front Side

### 2.4.1 Monitor

An LCD screen is installed on the front of the AFL-4 Series-N270. Please see the following table for LCD size, resolution, and brightness.

| LCD Specifications | AFL-408A- N270 | AFL-408B- N270 | AFL-W410A- N270 | AFL-412A- N270 | AFL-415A- N270 | AFL-415AE-N270 |
|---|---|---|---|---|---|---|
| LCD Size | 8.4" | 8.0" | 10.2" | 12.1" | 15" | 15" |
| Max Resolution | 800 x 600 | 800 x 600 | 1024 x 600 | 1024 x 768 | 1024 x 768 | 1024 x 768 |
| Brightness (cd/m2) | 400 | 300 | 400 | 400 | 350 | 250 |

**Figure 2-6: LCD Size, Resolution and Brightness**

### 2.4.2 Touch-Screen Module

A controller for the 4-wire/5-wire resistive touch screen is installed on the motherboard. The sensitive touch screen is accurate, reliable and durable.

### 2.4.3 Digital Camera and Digital Microphone

The AFL-4 Series-N270 has a built in 300K pixel digital camera and a digital microphone (not available on the AFL-408B and AFL-W410A) on the front panel. The user can use the camera and microphone for facial and voice recognition for access control applications.

### 2.4.4 Stereo Speakers

Two 1.5 W stereo speakers on the front side of the AFL-4 Series-N270 are interfaced to the system through a class-B dual output amplifier.

### 2.4.5 USB 2.0 Port

One USB 2.0 port is located on the front side of the AFL-4 Series-N270.

## 2.5 External Peripheral Interface Connectors

The following section describes the external peripheral interface connectors on the bottom panel of the subsystem.

### 2.5.1 Serial Port Connectors

The AFL-4 Series-N270 has two COM ports by RJ-45. One of these ports (COM1) is RS-232 only port. The other COM port (COM3) can be configured as a RS-232, RS-422 or an RS-485 serial port.

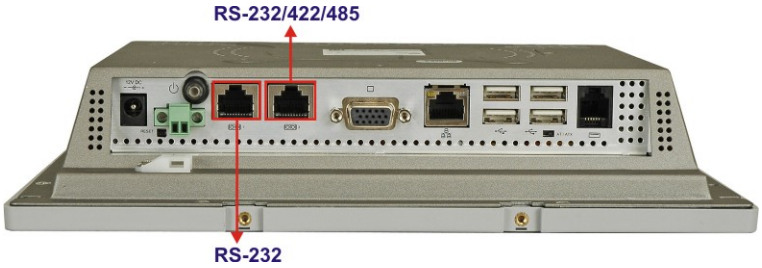



**Figure 2-7: COM Ports**

### 2.5.2 LAN Connectivity

The AFL-4 Series-N270 has two RJ-45 LAN connectors on the bottom panel.

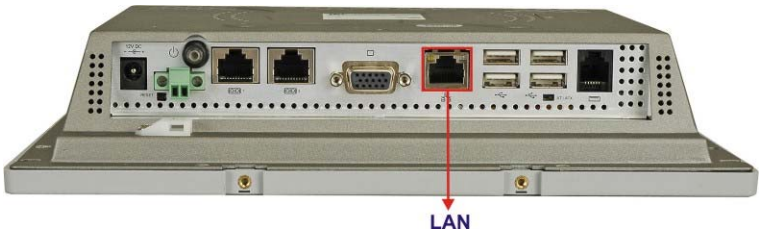



**Figure 2-8: RJ-45 Ethernet Connectors**

The PCIe lane from the Intel® ICH7 chipset of the AFL-4 Series-N270 is interfaced to the Realtek RTL8111CP PCIe gigabit Ethernet (GbE) controllers. The RTL8111CP controllers are connected directly to the RJ-45 connectors on the bottom panel and provide external GbE connectivity. Some of the RTL8111CP controller features are listed below:

- Integrated 10/100/1000 transceiver
- Supports PCI Express™ 1.1
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Serial EEPROM
- Transmit/Receive on-chip buffer support
- 64-pin QFN package (Green package)

### 2.5.3 External USB Connectors

There are two USB 2.0 connectors on the bottom panel of the AFL-4 Series-N270. Both USB 2.0 connectors are interfaced directly to the USB controllers on the ICH7M Southbridge. These USB connectors are fully compliant with USB specification Revision 2.0 and USB specification Revision 1.1 and can be interfaced to both USB 1.1 and USB 2.0 compliant devices.

**Figure 2-9: External USB Ports**

## 2.6 AC'97 Audio Codec Controller

The integrated AC'97 Audio compliant audio controller on the Intel® ICH7M Southbridge is integrated to a Realtek ALC888 audio codec. The Realtek ALC888 is connected to an amplifier which powers the two 1.5 Watt speakers.

## 2.7 System Power

The system can be run in the AT power mode or the ATX power mode. Both these power modes are described below.

### 2.7.1.1 ATX Power Mode (Default)

With the ATX mode selected, the AFL-4 Series-N270 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

- Security surveillance
- Point-of-Sale (POS)
- Advertising terminal

### 2.7.1.2 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL-4 Series-N270 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

- ATM
- Self-service kiosk
- Plant environment monitoring system
- Factory automation platform
- Manufacturing shop flow

### 2.7.2 Power Adapter

The AFL-4 Series-N270 is shipped with a 90 V to 264 V AC power adapter. The adapters shipped with the AFL-408A/B and AFL-W410 has a maximum power output of 40 W. The AFL-412A power adapter has a maximum output of 48 W. The AFL-415A/AE power adapters have a maximum of 60 W. The power adapter has a 12 V DC output connector.

### 2.7.3 Power Connector

There is one 12 V DC-IN center-pin power input connector and one DC-IN terminal block power input connector on the bottom panel. The power connector is shown in **Figure 2-10** below.

**Figure 2-10: Power Connector**

## 2.8 Wireless Connections

The following section describes the wireless modules on the circuit.

### 2.8.1 USB Bluetooth Module

An integrated Bluetooth module (not available on the AFL-408B and AFL-W410A) is connected to ICH7 chipset through the USB bus. The AFL-4 Series-N270 Bluetooth module enables wireless communications between the AFL-4 Series-N270 and various peripheral devices through a Bluetooth network. The peripheral devices may include:

- Headsets
- Barcode readers
- PDA
- Printers
- Cell phones
- Keyboard and mouse

The technical specifications of the Bluetooth module are listed in the Appendix.

### 2.8.2 Wireless Ethernet

An integrated 802.11 b/g wireless LAN module and PIFA antenna on the AFL-4 Series-N270 ensure an uninterrupted wireless connection. The wireless LAN module is preinstalled in the Mini-PCIe slot. PIFA antennas can receive high quality, uniform signals in any location from all directions without any degradation of signal or impedance and are the most efficient antennas on the market.

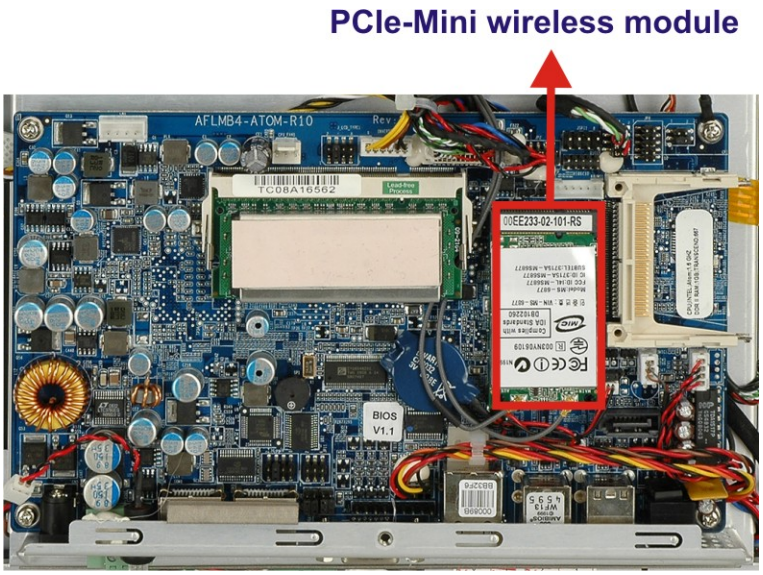



**Figure 2-11: PCIe-Mini Wireless Module**

## 2.9 Remote Control

The AFL-4 Series-N270 is shipped with a remote control which controls system on/off, LCD on/off, Ambient Light Sensor on/off, speaker volume, and LCD brightness.

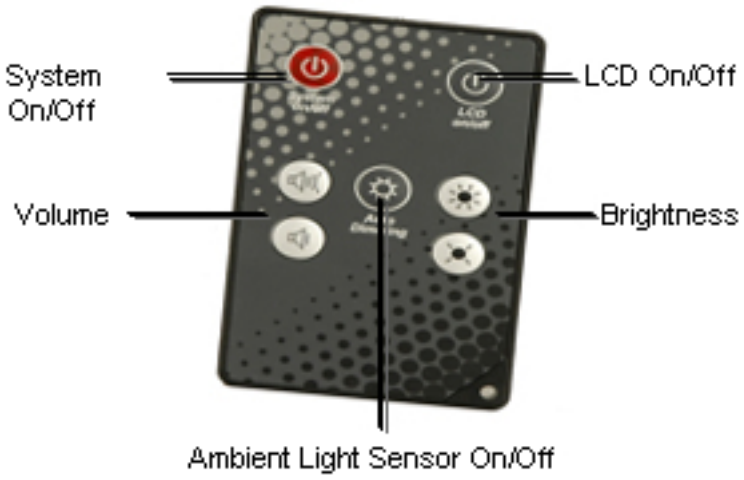



**Figure 2-12: Remote Control**

Chapter

3

# Unpacking

## 3.1 Unpacking

To unpack the flat panel PC, follow the steps below:

**WARNING!**

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the flat panel PC has been properly installed. This ensures the screen is protected during the installation process.

**Step 1:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.

**Step 2:** Open the external (second) box.

**Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.

**Step 4:** Lift the monitor out of the boxes.

**Step 5:** Remove both polystyrene ends, one from each side.

**Step 6:** Pull the plastic cover off the flat panel PC.

### 3.1.1 Packing List

Make sure all the components listed in the packing list are present. If any of these items are missing or damaged, contact the distributor or sales representative immediately.

The AFL-4 Series-N270 flat panel PC is shipped with the following components:

| Quantity | Item | Image |
|---|---|---|
| 1 | AFL-4 Series-N270 | |
| 1 | Power adapter | |
| 1 | Power cord | |
| 1 | Screw kit | |
| 4 | Adhesive foam tape strips | |
| 1 | User manual CD and driver CD | |
| 1 | Touch pen | |
| 1 | Remote control | |

l

| Optional | |
|---|---|
| AFL-408A Faceplate:<br>AFLFP-408A-W-R10(White)<br>AFLFP-408A-B-R10 (Black)<br>AFLFP-408A-G-R10 (Gray)<br>AFL-408B Faceplate:<br>AFLFP-408B-W-R10(White)<br>AFLFP-408B-B-R10 (Black)<br>AFLFP-408B-G-R10 (Gray)<br>AFL-W410A Faceplate:<br>AFLFP- W410A -W-R10(White)<br>AFLFP- W410A -B-R10 (Black)<br>AFLFP- W410A -G-R10 (Gray)<br>AFL-412A Faceplate:<br>AFLFP-412A-W-R10(White)<br>AFLFP-412A-B-R10 (Black)<br>AFLFP-412A-G-R10 (Gray)<br>AFL-415A/AE Faceplate:<br>AFLFP-415A-W-R10(White)<br>AFLFP-415A-B-R10 (Black)<br>AFLFP-415A-G-R10 (Gray) | |
| VSTAND:<br>VSTAND-A10<br>VSTAND-A12 | |
| Wall mounting kit<br>(**P/N**: AFLWK-12) | |

| | |
|---|---|
| Stand<br>(**P/N**:STAND-A08) for AFL-408A<br>(**P/N**:STAND-A12) for AFL-412A | |
| Stand<br>(**P/N**:STAND-100-RS) | |
| Stand<br>(**P/N**: STAND-150-RS) | |
| Arm<br>(**P/N**: ARM-11-RS) | |
| Arm<br>(**P/N**: ARM-31-RS) | |
| 60 W DC/DC 9-30 VDC input<br>vehicle power adapter:<br>IDD-930160-KIT | |
| DC 12 V Input UPS<br>AUPS-A10-R10 | |
| DC 9-36V Input UPS<br>AUPS-A20-R10 | |

Chapter

4

# Installation

## 4.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the maintenance of the AFL-4 Series-N270 may result in permanent damage to the AFL-4 Series-N270 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL-4 Series-N270. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL-4 Series-N270 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: - When configuring the AFL-4 Series-N270, place it on an antic-static pad. This reduces the possibility of ESD damaging the AFL-4 Series-N270.
- ***Only handle the edges of the PCB***: - When handling the PCB, hold the PCB by the edges.

## 4.2 Installation Precautions

When installing the flat panel PC, please follow the precautions listed below:

- **Power turned off**: When installing the flat panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers**: Only certified engineers should install and modify onboard functionalities.

- **Anti-static Discharge**: If a user open the rear panel of the flat panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear and anti-static wristband.

## 4.3 Preinstalled Components

The following components are all preinstalled.

- Motherboard
- TFT LCD screen
- 1.0 GB DDR2 memory module
- Resistive type touch screen
- Wireless LAN module
- Bluetooth module
- AT/ATX power switch

Preinstalled customizations may include the following.

- Different DDR2 memory module
- Hard disk drive (AFL-412A/AFL-415A/AE only)

Component installation is described in **the following sections.**

## 4.4 Installation and Configuration Steps

The following installation steps must be followed.

**Step 1:** Unpack the flat panel PC

**Step 2:** Install a CF card

**Step 3:** Install a HDD (ALF-12A/AFL-415A/AE only)

**Step 4:** Configure the system

**Step 5:** Connect peripheral devices to the bottom panel of the flat panel PC

**Step 6:** Mount the flat panel PC

**Step 7:** Install faceplate onto the flat panel PC

## 4.5 Removing the Rear Panel

To access the AFL-4 Series-N270 internally the rear panel must be removed. To remove the rear panel, please follow the steps below.

**Step 1:** Place the AFL-4 Series-N270 face down on a flat surface.

**Step 2:** Remove the retention screws (**Figure 4-1**).

**Figure 4-1: Back Cover Retention Screws**

**Step 3:** Lift the cover off and pull down the cover a bit to make it possible to lift the cover further more after removing the retention screws. More strength is required to separate the cover from the chassis.

## 4.6 CF Card Installation

The AFL-4 Series-N270 has one CF Type II slot inside the rear panel. The slot can be access without removing the back cover. To install the CF card, follow the instructions below.

**Step 1:** Locate the CF slot cover. Remove the retention screw and cover (**Figure 4-2**).

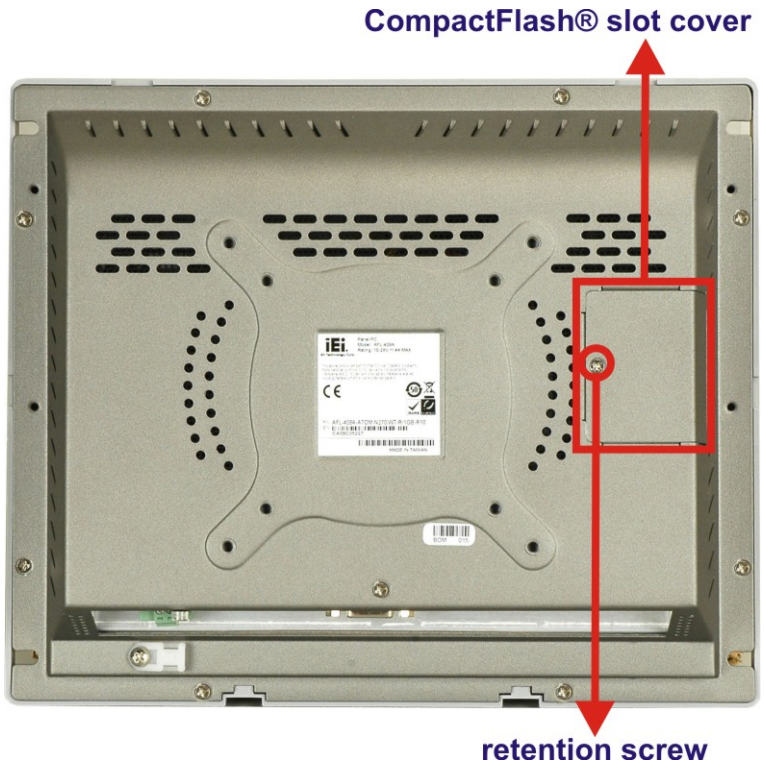



**Figure 4-2: CF card slot location**

**Step 2:** Insert a CF card into the slot (**Figure 4-3**).

**Figure 4-3: CF Card Location**

**Step 3:** Replace the CF card slot cover.

**Step 4:** Reinsert retention screw.

## 4.7 HDD Installation (AFL-412A and AFL-415A/AE Only)

To install the HDD into the AFL-412A/AFL-415A/AE, please follow the steps below:

**Step 1:** Remove the aluminum cover..

**Step 2:** Remove the four HDD bracket retention screws and lift the HDD bracket off the panel PC.

**Step 3:** Attach the HDD brackets to the HDD. To do this, align the four retention screw holes in the both sides of the HDD bracket with the retention screw holes on the sides of the HDD. Insert four retention screws into the HDD bracket (**Figure 4-4**).

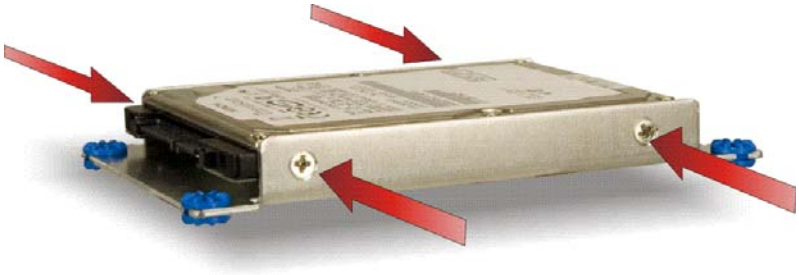


**Figure 4-4: AFL-412A/AFL-415A/AE HDD Retention Screws**

**Step 4:** Connect the SATA cable to the rear of HDD and the SATA connector on the motherboard.

**Step 5:** Install the HDD into the AFL-412A/AFL-415A/AE by aligning the retention screw holes in the HDD brackets with the retention screw holes on the chassis. Insert the four retention screws.

**Step 6:** Replace the aluminum back cover to the chassis.

**Step 7:** Replace the plastic back cover.

## 4.8 AT/ATX Mode Selection

AT and ATX power modes can both be used on the AFL-4 Series-N270. The selection is made through an AT/ATX switch on the bottom panel (**Figure 4-5**). To select AT mode or ATX mode, follow the steps below.

**Step 1:** Locate the AT/ATX switch on the bottom panel (**Figure 4-5**).

**Figure 4-5: AT/ATX Switch Location**

**Step 2:** Adjust the AT/ATX switch.

### 4.8.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL-4 Series-N270 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

- ATM
- Self-service kiosk
- Plant environment monitoring system
- Factory automation platform
- Manufacturing shop flow

### 4.8.2 ATX Power Mode

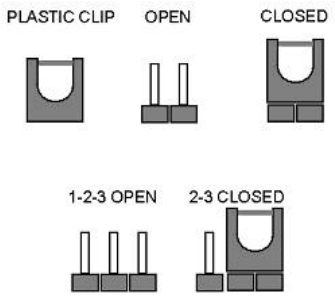
With the ATX mode selected, the AFL-4 Series-N270 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

- Security surveillance
- Point-of-Sale (POS)
- Advertising terminal

## 4.9 Jumper Settings

**NOTE:**

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.




The following jumpers can be found on the motherboard installed in the AFL-4 Series-N270. Before the AFL-4 Series-N270 is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the AFL-4 Series-N270 motherboard are listed in **Table 4-1**.

| Description | Label | Type |
|---|---|---|
| Clear CMOS | J_COMS1 | 2-pin header |
| COM3 RX RS-232/422/485 select | JP9 | 8-pin header |
| COM3 TX RS-422/485 select | JP11 | 6-pin header |
| COM3 RS-232/422/485 select | JP6 | 12-pin header |

**Table 4-1: Jumpers**

### 4.9.1 Access the Jumpers

To access the jumpers, remove the back panel. To remove the back panel, please refer to **Section 4.7 Step 1 ~ Step 4**.

### 4.9.2 Preconfigured Jumpers

**WARNING:**

Do not change the settings on the jumpers in described here. Doing so may disable or damage the system.

The following jumpers are preconfigured for the AFL-4 Series-N270. Users should not change these jumpers (**Table 4-2**).

| Jumper Name | Label | Type |
|---|---|---|
| LVDS voltage selection | J_VLVDS1 | 3-pin header |
| Touch Screen Select | J1 | 4-pin header |
| Panel Type and Resolution | J_LCD_TYPE1 | 10-pin header |

**Table 4-2: Preconfigured Jumpers**

### 4.9.3 Clear CMOS Jumper

**Jumper Label:** **J_CMOS1**

**Jumper Type:** 2-pin header

**Jumper Settings:** See **Table 4-3**

**Jumper Location:** See **Figure 4-6**

If the AFL-4 Series-N270 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close the pins for a few seconds then remove the jumper clip.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 4-3**.

| Clear CMOS | Description | |
|---|---|---|
| Short 1 - 2 | Keep CMOS Setup | Default |
| Short 2 - 3 | Clear CMOS Setup | |

**Table 4-3: Clear CMOS Jumper Settings**

The location of the clear CMOS jumper is shown in **Figure 4-6** below.

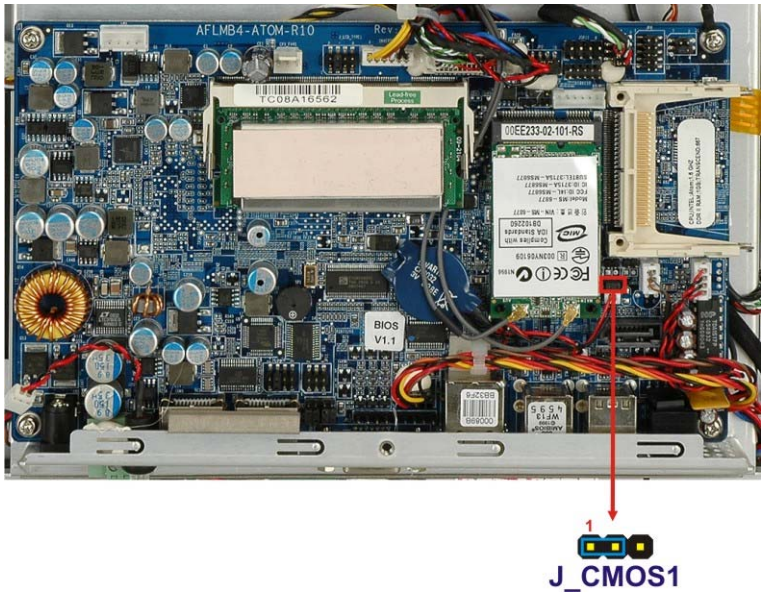



**Figure 4-6: Clear CMOS Jumper**

## 4.9.4 COM3 RX Function Select Jumper

**Jumper Label:** **JP9**

**Jumper Type:** 8-pin header

**Jumper Settings:** See **Table 4-4**

**Jumper Location:** See **Figure 4-7**

The COM3 RX Function Select jumper sets the communication protocol used by the COM3 port as RS-232, RS-422 or RS-485. The COM3 RX Function Select jumper settings are shown in **Table 4-4**.

| COM3 RX Function Select | Description | |
|---|---|---|
| Short 3-4 | RS-232 | Default |
| Short 1-2, 5-6 | RS-422 | |
| Short 1-2, 7-8 | RS-485 | |

**Table 4-4: COM3 RX Function Select Jumper Settings**

The COM3 RX Function Select jumper location is shown in **Figure 4-7**.

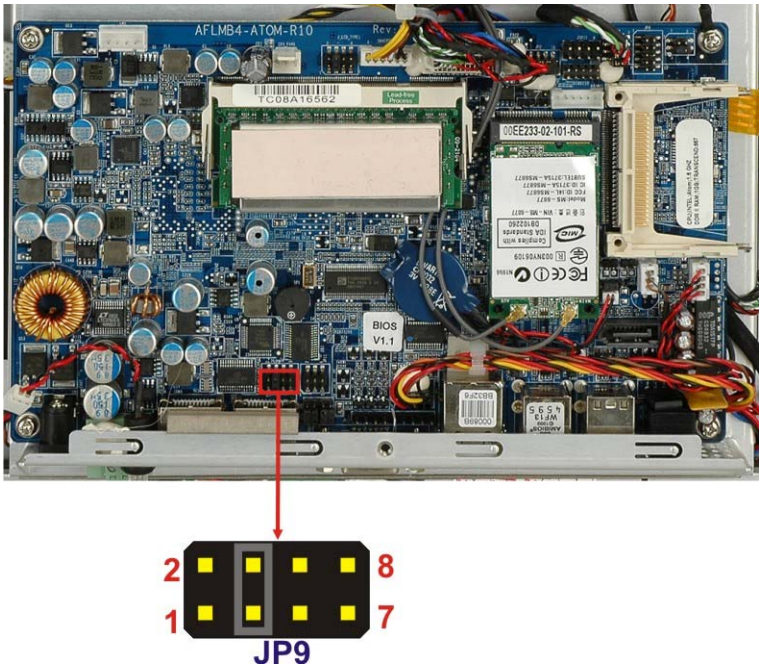



**Figure 4-7: COM3 RX Function Select Jumper Location**

### 4.9.5 COM3 TX Function Select Jumper

**Jumper Label:** **JP11**

**Jumper Type:** 6-pin header

**Jumper Settings:** See **Table 4-5**

**Jumper Location:** See **Figure 4-8**

The COM3 TX Function Select jumper configures the TX pin on COM3 serial port connector as RS-422 as an RS-485. The COM3 TX Function Select jumper selection options are shown in **Table 4-5**.

| COM3 TX Function Select | Description | |
|---|---|---|
| Short 1 – 3 | RS-422 | Default |
| Short 2 – 4 | RS-422 | Default |
| Short 3 – 5 | RS-485 | |
| Short 4 – 6 | RS-485 | |

**Table 4-5: COM3 TX Function Select Jumper Settings**

The COM3 TX Function Select jumper location is shown in **Figure 4-8** below.

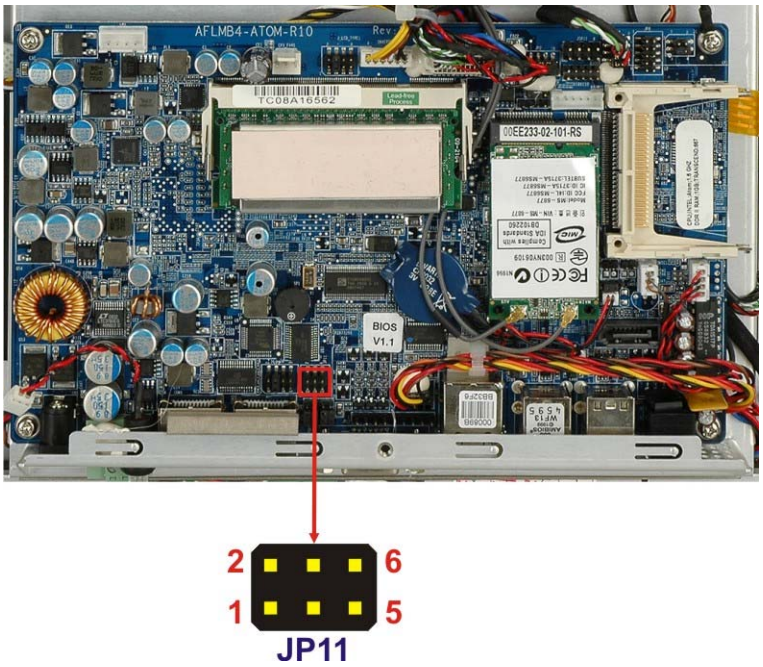



**Figure 4-8: COM3 TX Function Select Jumper Pinout Locations**

### 4.9.6 COM3 RS-232/422/485 Serial Port Select Jumper

**Jumper Label:** **JP6**

**Jumper Type:** 12-pin header (four 3-pin headers combined)

**Jumper Settings:** See **Table 4-6**

**Jumper Location:** See **Figure 4-9**

The COM3 RS-232/422/485 Serial Port Select jumper sets the communication protocol used by the second serial communications port (COM3) as RS-232, RS-422 or RS-485. The COM3 RS-232/422/485 Serial Port Select settings are shown in **Table 4-6**.

| RS-232/485 Select | Description | |
|---|---|---|
| Short 1-2 | RS-232 | Default |
| Short 4-5 | RS-232 | Default |
| Short 7-8 | RS-232 | Default |
| Short 10-11 | RS-232 | Default |
| Short 2-3 | RS-422/485 | |
| Short 5-6 | RS-422/485 | |
| Short 8-9 | RS-422/485 | |
| Short 11-12 | RS-422/485 | |

**Table 4-6: COM3 RS-232/422/485 Serial Port Select Jumper Settings**

The COM3 RS-232/422/485 Serial Port Select jumper location is shown in **Figure 4-9**.

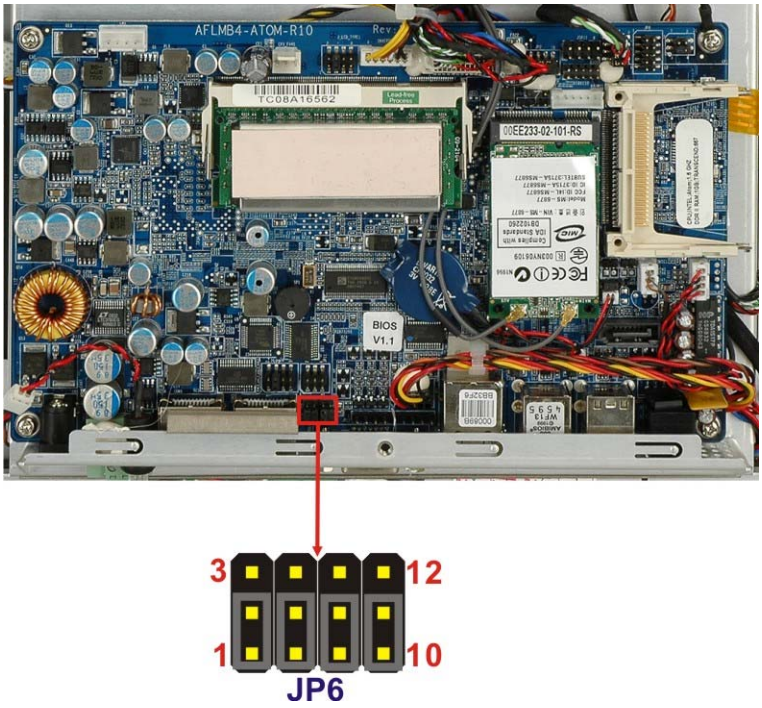



**Figure 4-9: COM3 RS-232/422/485 Serial Port Select Jumper Location**

## 4.10 Mounting the System

**WARNING!**

When mounting the flat panel PC onto an arm, onto the wall or into a wall, it is better to have more than one person to help with the installation to make sure the panel PC does not fall down and get damaged.

The methods of mounting the AFL-4 Series-N270 are listed below.

- Wall mounting
- Arm mounting
- Rack mounting

The mounting methods are described in the following sections.

### 4.10.1 Wall Surface Mounting

To mount the flat panel PC onto the wall, please follow the steps below.

**Step 1:** Select the location on the wall for the wall-mounting bracket.

**Step 2:** Carefully mark the locations of the four screw holes in the bracket on the wall.

**Step 3:** Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

**Step 4:** Align the wall-mounting bracket screw holes with the pilot holes.

**Step 5:** Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 4-10**).

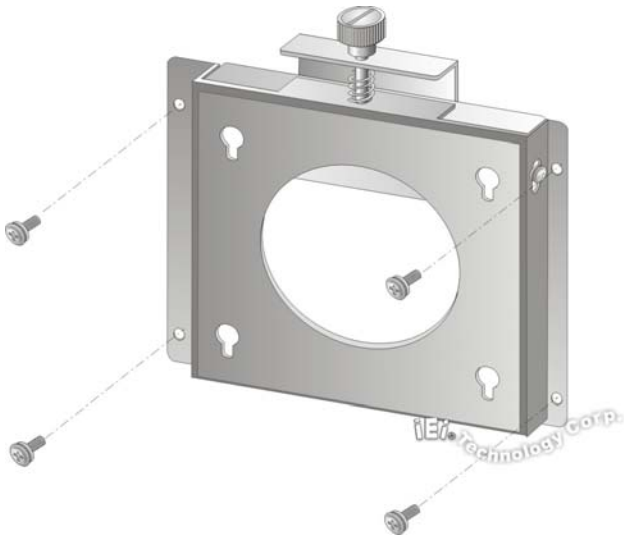


**Figure 4-10: Wall-mounting Bracket**

**Step 6:** Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the flat panel PC and tighten until the screw shank is secured against the rear panel (**Figure 4-11**).

**Step 7:** Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

**Step 8:** Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 4-11**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

**NOTE:**

In the diagram below the bracket is already installed on the wall.

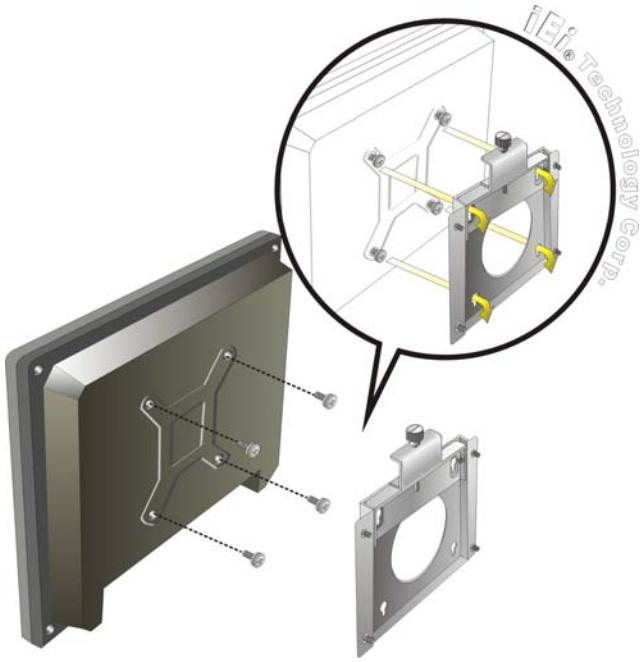


**Figure 4-11: Chassis Support Screws**

**Step 9:** Secure the panel PC by fastening the retention screw of the wall-mounting bracket. (**Figure 4-12**).

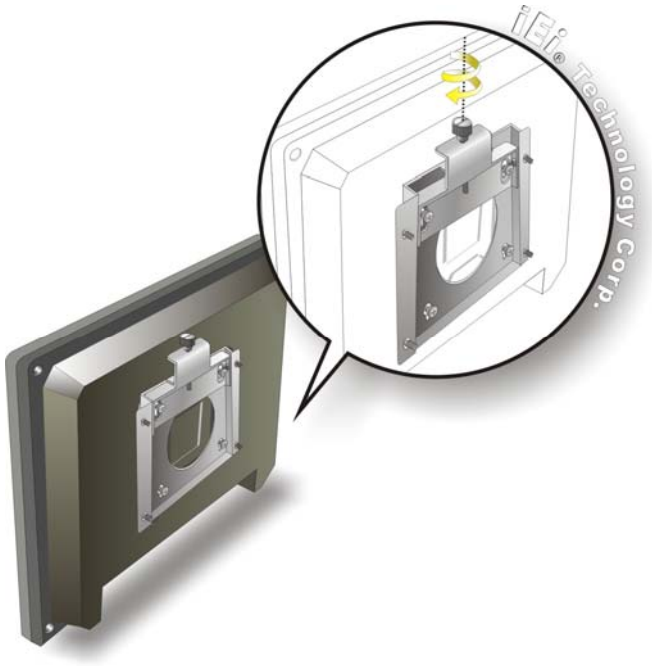


**Figure 4-12: Secure the Panel PC**

### 4.10.2 In-wall Mounting

Before installing into a wall mounting, attach the adhesive strips to the sides as shown below:

**Step 1:** Place the AFL-4 Series-N270 face down on a flat surface.

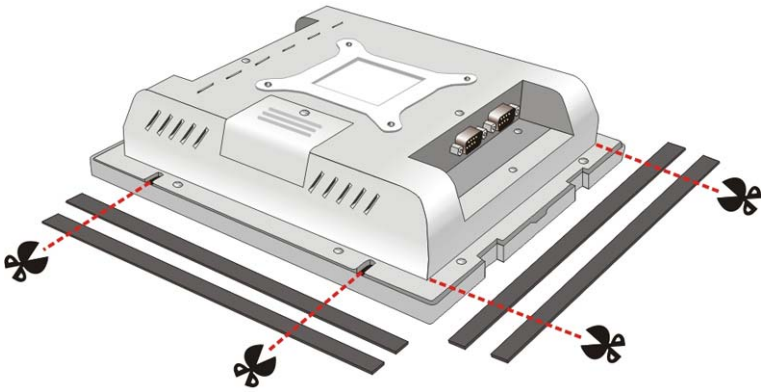


**Figure 4-13: Cut Foam Tape**

**Step 2:** Cut the adhesive foam tape as shown above.

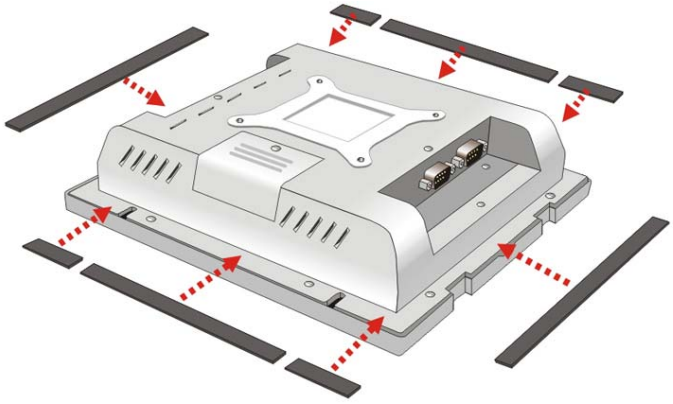


**Figure 4-14: Attach Foam Tape**

**Step 3:** Attach the adhesive foam tape to the edge of rear panel of the AFL-4 Series-N270 (see **Figure 4-14)**. Make sure the adhesive tape does not cover the screw holes as shown below.

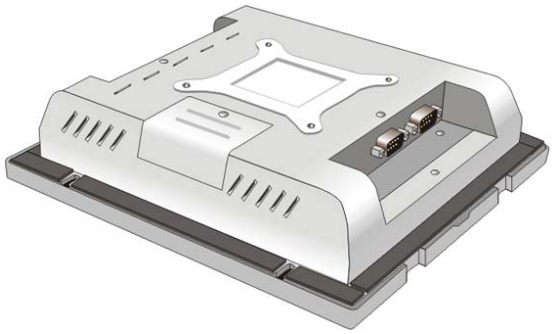


**Figure 4-15: Foam Tape Installed**

To mount the AFL-4 Series-N270 panel PC into a wall, please follow the steps below.

**Step 1:** Select the position on the wall to mount the flat panel PC.

**Step 2:** Cut out a section from the wall that corresponds to the dimensions in **Figure 4-16** for the AFL-408A/B or **Figure 4-164** for the AFL-W410A or **Figure 4-18** for the AFL-412A or **Figure 4-166** for the AFL-415A/AE. Take care that the wall section that is cut out is no larger than the suggested cut out size for the corresponding panel PC.

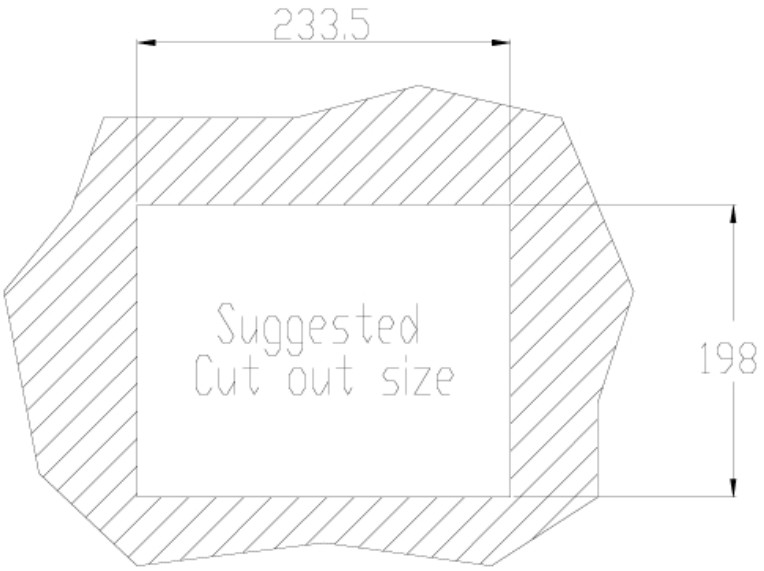



**Figure 4-16: AFL-408A/B-N270 In-wall Panel Opening**

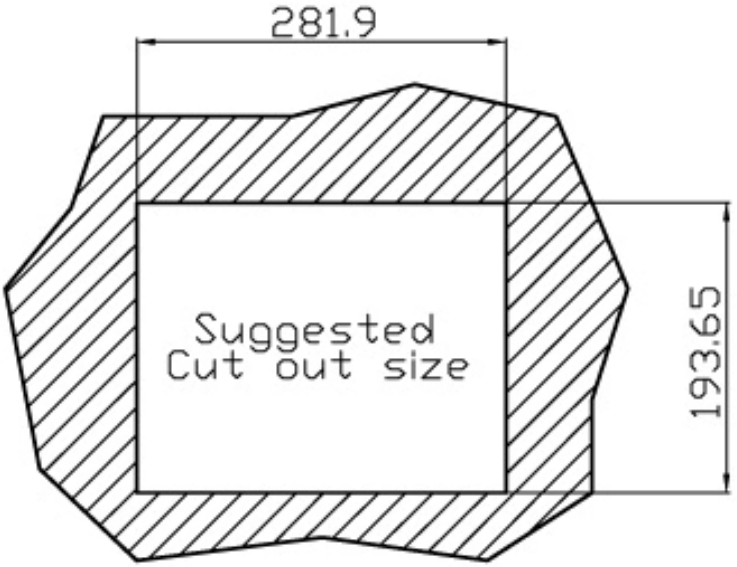



**Figure 4-17: AFL-W410A-N270 In-wall Opening**

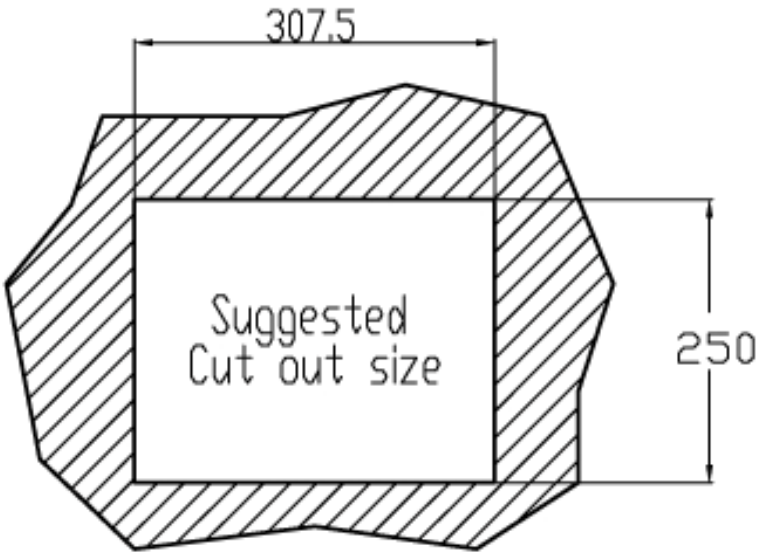



**Figure 4-18: AFL-412A-N270 In-wall Opening**

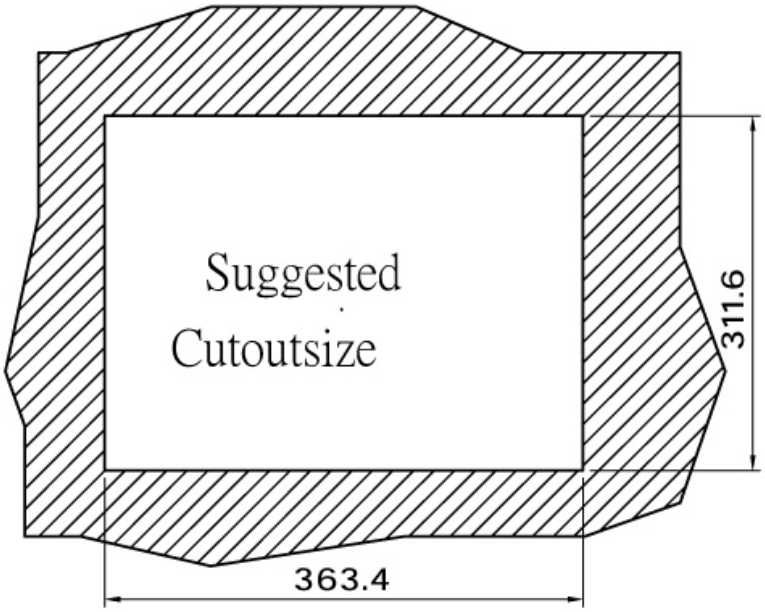



**Figure 4-19: AFL-415A/AE-N270 In-wall Opening**

**Step 3:** Slide the flat panel PC through the hole until the frame is flush against the wall.

**Step 4:** Tighten the screws that pass through the wall mounting screw holes in the AFL-4 Series-N270 until the screws are firmly secured to the wall (**Figure 4-20**).

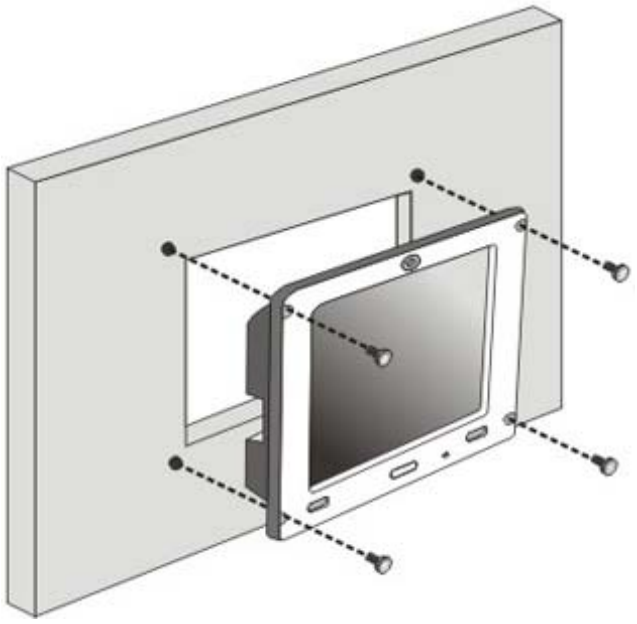


**Figure 4-20: Tighten the In-wall Mounting Screws**

### 4.10.3 Arm Mounting

The AFL-4 Series-N270 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75mm or 100mm interface pad. To mount the AFL-4 Series-N270 on an arm, please follow the steps below.

**Step 1:** The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

**NOTE:**

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 75 mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL-4 Series-N270 flat panel PC. The AFL-4 Series-N270 also support VESA MIS-D 100.

**Step 2:** Once the mounting arm has been firmly attached to the surface, lift the flat panel PC onto the interface pad of the mounting arm.

**Step 3:** Align the retention screw holes on the mounting arm interface with those in the flat panel PC. The arm mount retention screw holes are shown in **Figure 4-21**.

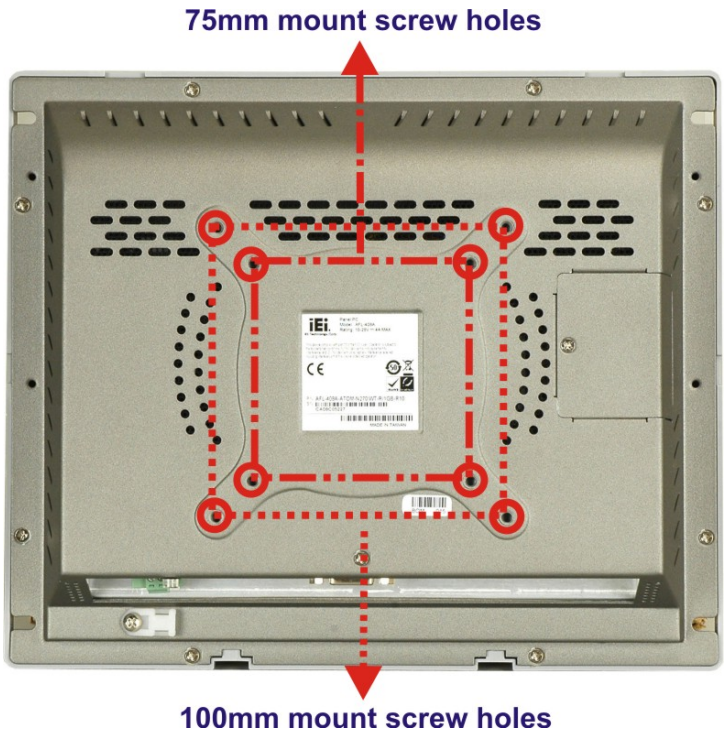



**Figure 4-21: AFL-412A-N270 Arm Mounting Retention Screw Holes**

**Step 4:** Secure the flat panel PC to the interface pad by inserting four retention screws through the bottom of the mounting arm interface pad and into the flat panel PC.

## 4.11 Bottom Panel Connectors

### 4.11.1 LAN Connection

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

**Step 1:** **Locate the RJ-45 connector** on the bottom panel of the AFL-4 Series-N270 Series.

**Step 2:** **Align the connector.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the bottom panel of the AFL-4 Series-N270. See **Figure 4-22**.

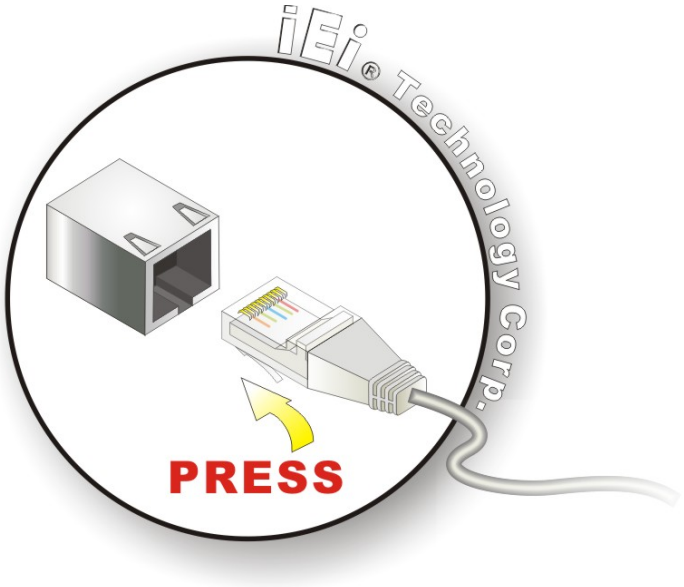



**Figure 4-22: LAN Connection**

**Step 3:** **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

### 4.11.2 Serial Device Connection

The AFL-4 Series-N270 has two RJ-45 COM port connectors for connecting to RS-232 and RS-232/422/485 serial devices on the bottom panel. Follow the steps below to connect a serial device to the AFL-4 Series-N270 panel PC.

**Step 1:** **Locate the RJ-45 COM port connectors**. The location of the connector is shown in **Chapter 2**.

**Step 2:** **Align the connector.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the bottom panel of the AFL-4 Series-N270. See **Figure 4-23**.

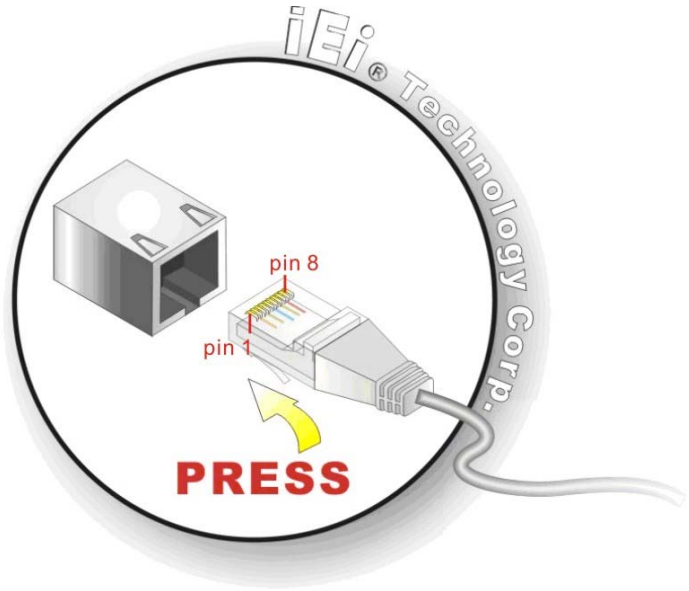



**Figure 4-23: Serial Device Connector**

**Step 3:** **Insert the connector**. Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

### 4.11.2.1 RJ-45 Serial Port Pinouts

The pinouts for RS-232, RS-422 and RS-485 communication are shown below. The COM1 serial port is RS-232 only.

| PIN NO. | RS-232 | RS-422 | RS-485 |
|---|---|---|---|
| 1 | DCD | TX- | D- |
| 2 | DSR | RX- | |
| 3 | RX | TX+ | D+ |
| 4 | RTS | RX+ | |
| 5 | TX | | |
| 6 | CTS | | |
| 7 | DTR | | |
| 8 | RI | | |
| SHIELD | GND | | |

**Table 4-7: RS-232/422/485 Pinouts**

### 4.11.3 Serial Device Connection Using a RJ-45 to DB-9 Cable

Follow the steps in the section above to connect a RJ-45 to DB-9 cable to the RJ-45 serial port on the AFL-4 Series-N270 panel PC. Then follow the steps below to connect a serial device to the cable.

**Step 1:** **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector end of the RJ-45 to DB-9 cable. See **Figure 4-23**.

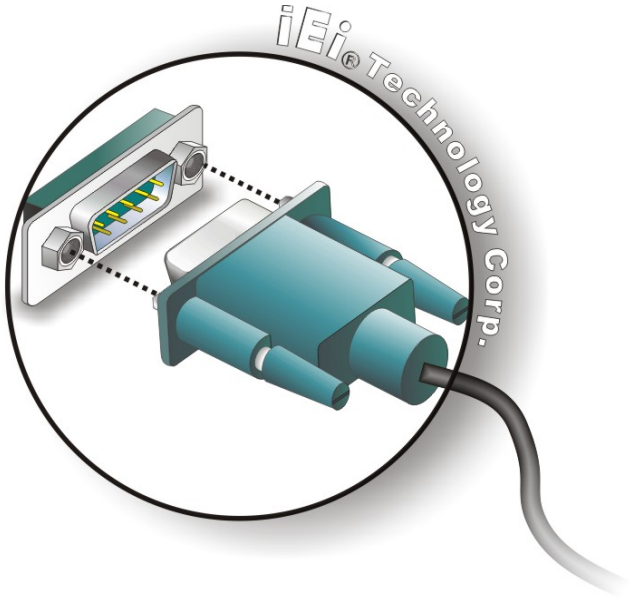



**Figure 4-24: Serial Device Connector**

**Step 2:** **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

#### 4.11.3.1 RS-232, RS-422 and RS-485 Pinouts

The pinouts for RS-232, RS-422 and RS-485 operation of external serial ports COM1 and COM3 using a RJ-45 to DB-9 cable are detailed below. The COM1 serial port is RS-232 only.

| PIN NO. | RS-232 | RS-422 | RS-485 |
|---|---|---|---|
| 1 | DCD | TX- | D- |
| 2 | RX | TX+ | D+ |
| 3 | TX | | |
| 4 | DTR | | |
| 5 | GND | | |
| 6 | DSR | RX- | |
| 7 | RTS | RX+ | |
| 8 | CTS | | |
| 9 | RI | | |

**Table 4-8: RS-232/422/485 Pinouts**

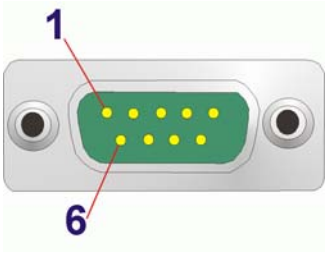



**Figure 4-25: Serial Port Pinouts**

### 4.11.4 USB Device Connection

There are four external USB 2.0 connectors. All connectors are perpendicular to the AFL-4 Series-N270. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

**Step 1:** **Located the USB connectors**. The locations of the USB connectors are shown in **Chapter 2**.

**Step 2:** **Align the connectors.** Align the USB device connector with one of the connectors on the bottom panel. See **Figure 4-26**.

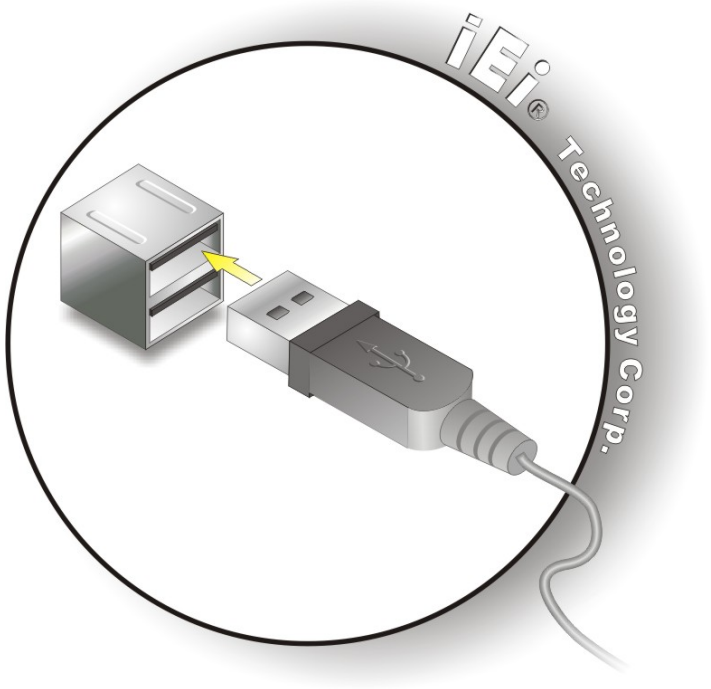


**Figure 4-26: USB Device Connection**

**Step 3:** **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

## 4.12 Faceplate Installation

An optional faceplate in a variety of colors is available for mounting onto the AFL-4 Series-N270 frame.

**Step 1:** Install the faceplate. Snap faceplate onto the AFL-4 Series-N270 frame. See **Figure 4-27**.

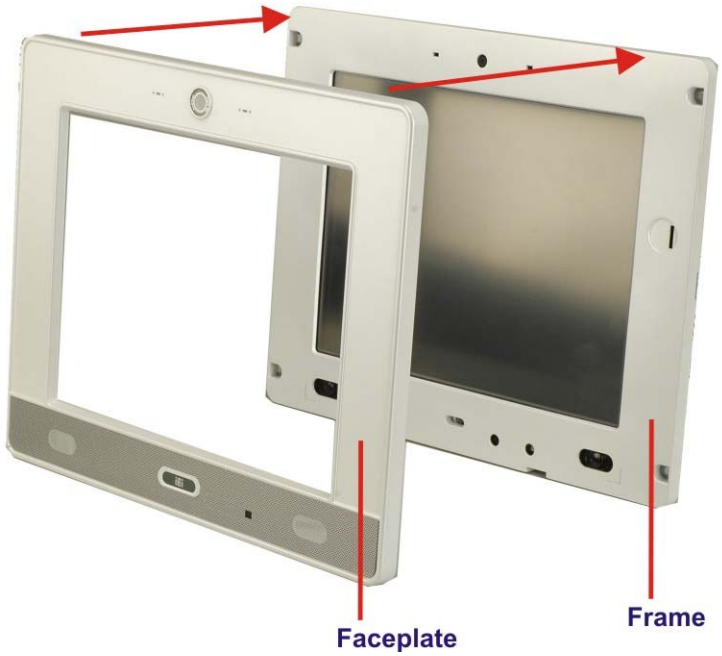



**Figure 4-27: Faceplate Installation**

Chapter

5

# System Maintenance

## 5.1 System Maintenance Introduction

If the components of the AFL-4 Series-N270 fail they must be replaced. Components that can be replaced include:

- CF Module
- Bluetooth module
- Wireless LAN module
- SO-DIMM module

Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions for the AFL-4 Series-N270 are described below.

## 5.2 Anti-static Precautions

➔ **WARNING:**

Failure to take ESD precautions during the maintenance of the AFL-4 Series-N270 may result in permanent damage to the AFL-4 Series-N270 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL-4 Series-N270. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL-4 Series-N270 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: - When configuring the AFL-4 Series-N270, place it on an antic-static pad. This reduces the possibility of ESD damaging the AFL-4 Series-N270.

- ***Only handle the edges of the PCB***: - When handling the PCB, hold the PCB by the edges.

## 5.3 Turn off the Power

**WARNING:**

Failing to turn off the system before opening it can cause permanent damage to the system and serious or fatal injury to the user.

Before any maintenance procedures are carried out on the system, make sure the system is turned off.

## 5.4 Opening the System

### 5.4.1 Removing the Back Panel

To access the AFL-4 Series-N270 internally the back panel must be removed. To remove the back panel, please follow the steps below.

**Step 2:** **Follow all anti-static procedures**. See **Section 5.2**.

**Step 3:** **Turn off the power**. See **Section 5.3**.

**Step 4:** **Remove the retention screws on the back**. Remove the retention screws (**Figure 5-1**) from the rear panel.

**Figure 5-1: Back Cover Retention Screws**

**Step 5:** Lift the cover off and pull down the cover a bit to make it possible to lift the cover further more after removing the retention screws. More strength is required to separate the cover from the chassis.

## 5.5 Replacing Components

### 5.5.1 Memory Module Replacement

The flat panel PC is preinstalled with a 1 GB DDR2 memory module. If the memory module is fail, follow the instructions below to replace the memory module.

**Step 1:** Remove the aluminum back cover. See **Section 5.4.1** above.

**Step 2:** Locate the DDR2 SO-DIMM on the motherboard (**Figure 5-2**).

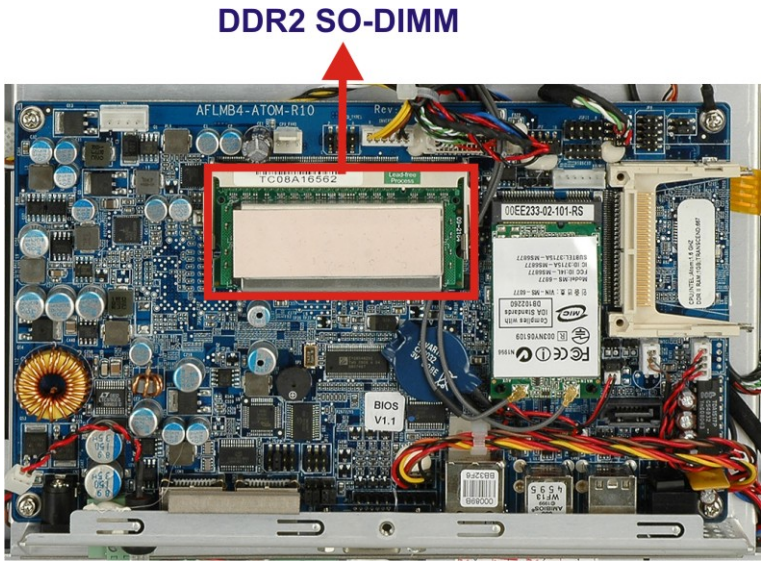



**Figure 5-2: AFL-412A-N270 SO-DIMM Socket Location**

**Step 3:** Remove the DDR memory module by pulling both the spring retainer clips outward from the socket.

**Step 4:** Grasp the DDR memory module by the edges and carefully pull it out of the socket.

**Step 5:** Install the new DDR memory module by pushing it into the socket at an angle (**Figure 5-3**).

**Step 6:** Gently pull the spring retainer clips of the SO-DIMM socket out and push the rear of the DDR memory module down (**Figure 5-3**).

**Step 7:** Release the spring retainer clips on the SO-DIMM socket. They clip into place and secure the DDR memory module in the socket.

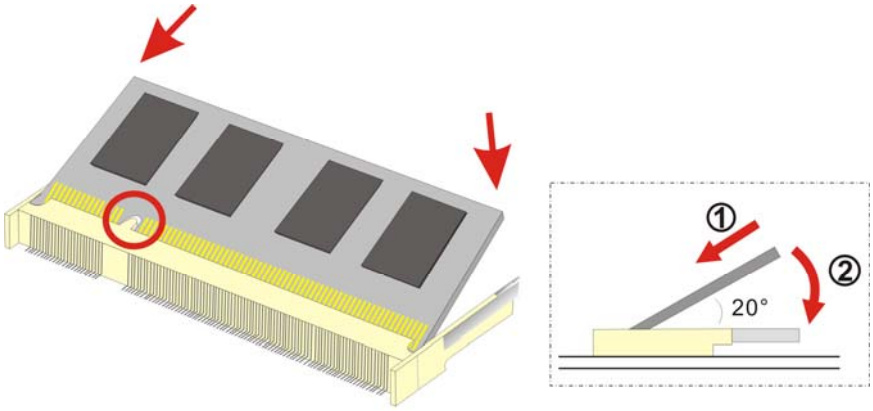



**Figure 5-3: DDR SO-DIMM Module Installation**

### 5.5.2 CF Card Replacement

The AFL-4 Series-N270 has one CF Type II slot. Follow the instructions below to replace the CF card.

**Step 1:** **Follow all anti-static procedures**. See **Section 5.2**.

**Step 2:** **Turn off the power**. See **Section 5.3**.

**Step 3:** **Follow the instruction listed in Section 4.6 to replace the CF card.**

## 5.6 Reinstalling the Covers

**WARNING:**

Failing to reinstall the covers may result in permanent damage to the system. Please make sure all coverings are properly installed.

When maintenance procedures are complete, please make sure all the covers are replaced, including the following:

- Aluminum cover
- CF card slot cover

Chapter

6

# BIOS Options

# 6.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

## 6.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

## 6.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in.

| Key | Function |
|---|---|
| Up arrow | Move to previous item |
| Down arrow | Move to next item |
| Left arrow | Move to the item on the left hand side |
| Right arrow | Move to the item on the right hand side |
| Esc key | Main Menu – Quit and not save changes into CMOS<br>Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu |
| Page Up key | Increase the numeric value or make changes |
| Page Dn key | Decrease the numeric value or make changes |

| | |
|---|---|
| F1 key | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| F2 /F3 key | Change color from total 16 colors. F2 to select color forward. |
| F10 key | Save all the CMOS changes, only for Main Menu |

**Table 6-1: BIOS Navigation Keys**

### 6.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

### 6.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 5**.

### 6.1.5 BIOS Menu Bar

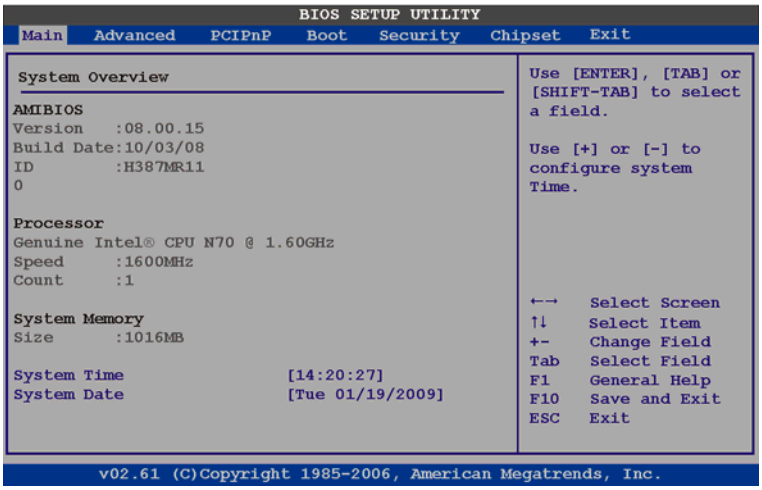
The **menu bar** on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

## 6.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.




**BIOS Menu 1: Main**

- **System Overview**

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- **AMI BIOS**: Displays auto-detected BIOS information
  - Version: Current BIOS version
  - Build Date: Date the current BIOS version was made
  - ID: Installed BIOS ID
- **Processor**: Displays auto-detected CPU specifications
  - Type: Names the currently installed processor
  - Speed: Lists the processor speed
  - Count: The number of CPUs on the CPU card
- **System Memory**: Displays the auto-detected system memory.
  - Size: Lists memory size

**The System Overview field also has two user configurable fields:**

- **System Time [xx:xx:xx]**

  Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

- **System Date [xx/xx/xx]**

  Use the **System Date** option to set the system date. Manually enter the day, month and year.

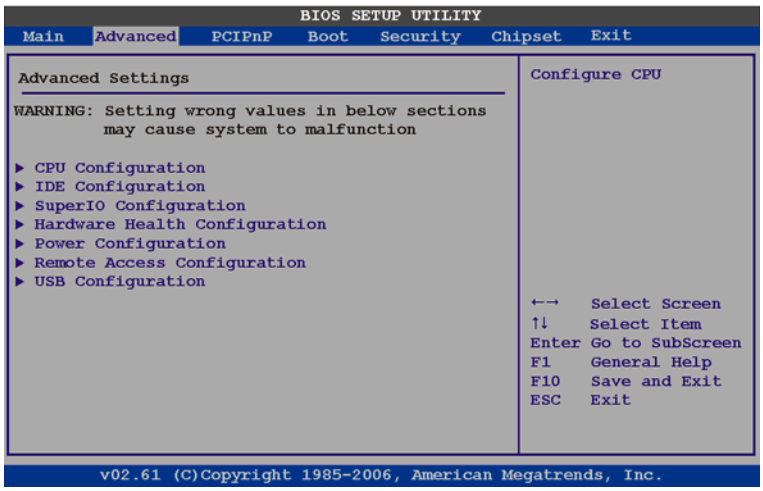
## 6.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

**WARNING:**

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

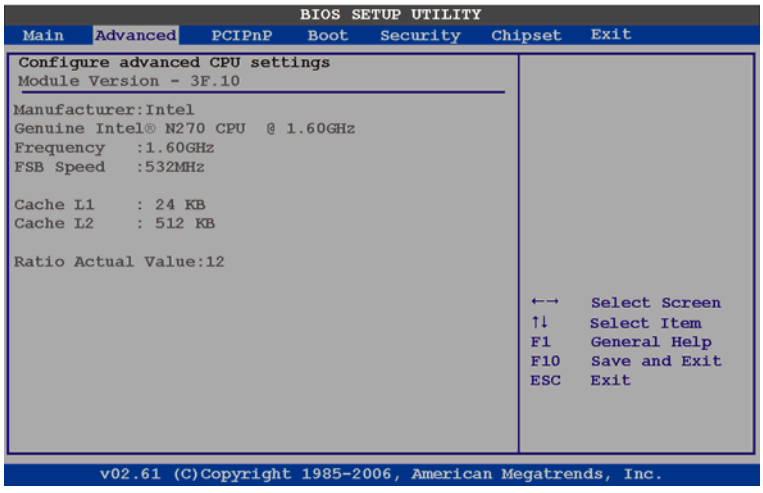
- CPU Configuration (see **Section 6.3.1**)
- IDE Configuration (see **Section 6.3.2**)
- Super I/O Configuration (see **Section 6.3.3**)
- Hardware Health Configuration (see **Section 6.3.4)**
- Power Configuration **(see Section 6.3.5**)
- Remote Access Configuration (see **Section 6.3.6**)
- USB Configuration (see **Section 6.3.8**)




**BIOS Menu 2: Advanced**

### 6.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.




**BIOS Menu 3: CPU Configuration**

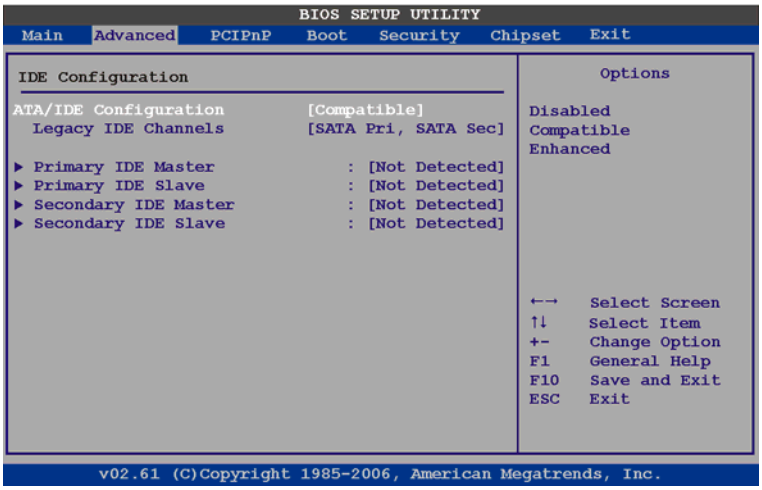
The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- **Manufacturer**: Lists the name of the CPU manufacturer
- **Brand String**: Lists the brand name of the CPU being used

- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size

### 6.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.




**BIOS Menu 4: IDE Configuration**

- **ATA/IDE Configurations [Compatible]**

Use the **ATA/IDE Configurations** option to configure the ATA/IDE controller.

➔ **Disabled** Disables the on-board ATA/IDE controller.

➔ **Compatible** **DEFAULT** Configures the on-board ATA/IDE controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

➔ **Enhanced** Configures the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6

storage devices. Some legacy OS do not support this mode.

- **Legacy IDE Channels [PATA Pri, SATA Sec]**

  - ➔ **SATA Only** — Only the SATA drives are enabled.
  - ➔ **SATA Pri, PATA Sec** **DEFAULT** — The IDE drives are enabled on the Primary IDE channel. The SATA drives are enabled on the Secondary IDE channel.
  - ➔ **PATA Only** — The IDE drives are enabled on the primary and secondary IDE channels. SATA drives are disabled.

- **IDE Master and IDE Slave**

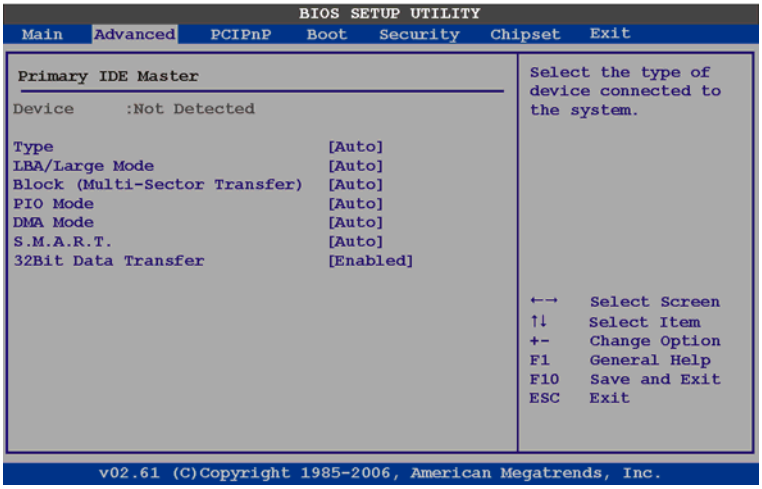
When entering setup BIOS automatically detects the presence of IDE devices. The BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 6.3.2.1** appear.

### 6.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.




**BIOS Menu 5: IDE Master and IDE Slave Configuration**

- **Auto-Detected Drive Parameters**

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type**: Indicates the type of devices a user can manually select
- **Vendor**: Lists the device manufacturer
- **Size**: List the storage capacity of the device.
- **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode**: Indicates the PIO mode of the installed device.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

- **32Bit Data Transfer**: Enables 32-bit data transfer.

- **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

| | | |
|---|---|---|
| ➔ **Not Installed** | | BIOS is prevented from searching for an IDE disk drive on the specified channel. |
| ➔ **Auto** | **DEFAULT** | The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel. |
| ➔ **CD/DVD** | | The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel. |
| ➔ **ARMD** | | This option specifies an ATAPI Removable Media Device. These include, but are not limited to:<br>▪ **ZIP**<br>▪ **LS-120** |

- **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

| | | |
|---|---|---|
| ➔ **Disabled** | | BIOS is prevented from using the LBA mode control on the specified channel. |
| ➔ **Auto** | **DEFAULT** | BIOS auto detects the LBA mode control on the specified channel. |

- **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

| | | |
|---|---|---|
| ➔ **Disabled** | | BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time. |
| ➔ **Auto** | **DEFAULT** | BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time. |

- **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

| | | |
|---|---|---|
| ➔ **Auto** | **DEFAULT** | BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined. |
| ➔ **0** | | PIO mode 0 selected with a maximum transfer rate of 3.3MBps |
| ➔ **1** | | PIO mode 1 selected with a maximum transfer rate of 5.2MBps |
| ➔ **2** | | PIO mode 2 selected with a maximum transfer rate of 8.3MBps |
| ➔ **3** | | PIO mode 3 selected with a maximum transfer rate of 11.1MBps |
| ➔ **4** | | PIO mode 4 selected with a maximum transfer rate of 16.6MBps (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.) |

- **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- **Auto** **DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps
- **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps
- **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps
- **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps
- **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
- **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps
- **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps
- **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

- **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

| | | | |
|---|---|---|---|
| ➔ | **Auto** | **DEFAULT** | BIOS auto detects HDD SMART support. |
| ➔ | **Disabled** | | Prevents BIOS from using the HDD SMART feature. |
| ➔ | **Enabled** | | Allows BIOS to use the HDD SMART feature |

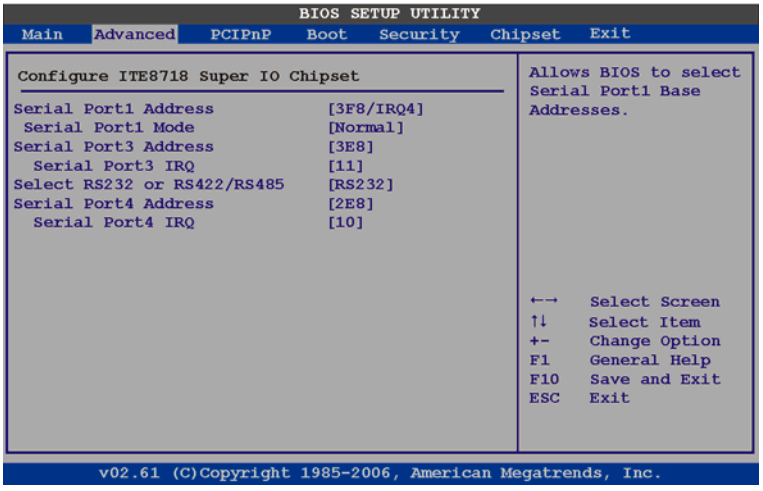
- **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | | Prevents the BIOS from using 32-bit data transfers. |
| ➔ | **Enabled** | **DEFAULT** | Allows BIOS to use 32-bit data transfers on supported hard disk drives. |

### 6.3.3 Super I/O Configuration

Use the **Super I/O Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Configure ITE8718 Super IO Chipset
Serial Port1 Address [3F8/IRQ4]
Serial Port1 Mode [Normal]
Serial Port3 Address [3E8]
Serial Port3 IRQ [11]
Select RS232 or RS422/RS485 [RS232]
Serial Port4 Address [2E8]
Serial Port4 IRQ [10]
Allows BIOS to select Serial Port1 Base Addresses.
←→ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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**BIOS Menu 6: Super I/O Configuration**

- **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

| | | |
|---|---|---|
| ➔ **Disabled** | | No base address is assigned to Serial Port 1 |
| ➔ **3F8/IRQ4** | **DEFAULT** | Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4 |
| ➔ **2F8/IRQ3** | | Serial Port 1 I/O port address is 2F8 and the interrupt address is IRQ3 |
| ➔ **3E8/IRQ4** | | Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4 |
| ➔ **2E8/IRQ3** | | Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3 |

- **Serial Port1 Mode [Normal]**

Use the **Serial Port1 Mode** option to select the transmitting and receiving mode for the first serial port.

| | | |
|---|---|---|
| ➔ **Normal** | **DEFAULT** | Serial Port 1 mode is normal |
| ➔ **IrDA** | | Serial Port 1 mode is IrDA |
| ➔ **ASK IR** | | Serial Port 1 mode is ASK IR |

- **Serial Port3 Address [3E8]**

Use the **Serial Port3 Address** option to select the Serial Port 3 base address.

| | | |
|---|---|---|
| ➔ **Disabled** | | No base address is assigned to Serial Port 3 |
| ➔ **3E8** | **DEFAULT** | Serial Port 3 I/O port address is 3E8 |
| ➔ **2E8** | | Serial Port 3 I/O port address is 2E8 |
| ➔ **2F0** | | Serial Port 3 I/O port address is 2F0 |
| ➔ **2E0** | | Serial Port 3 I/O port address is 2E0 |

- **Serial Port3 IRQ [11]**

  Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

  ➔ **10** Serial port 3 IRQ address is 10

  ➔ **11** **DEFAULT** Serial port 3 IRQ address is 11

- **Serial Port4 Address [2E8]**

  Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

  ➔ **Disabled** No base address is assigned to serial port 3

  ➔ **2E8** **DEFAULT** Serial port 4 I/O port address is 2E8

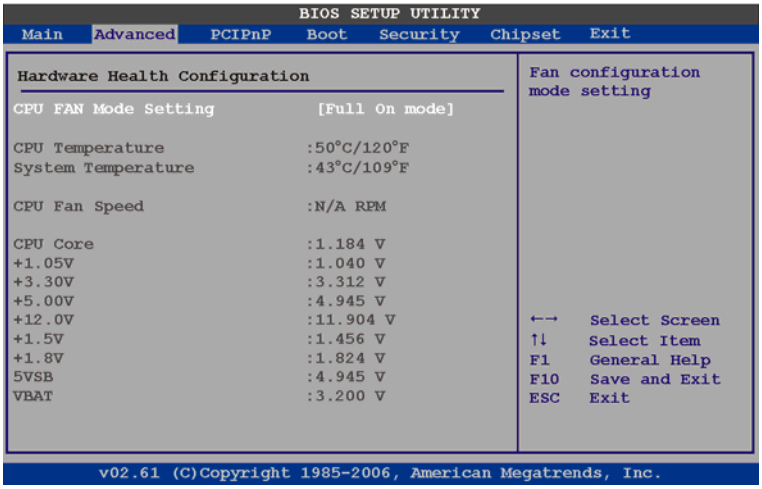
- **Serial Port4 IRQ [10]**

  Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

  ➔ **10** **DEFAULT** Serial port 4 IRQ address is 10

### 6.3.4 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 7**) shows the operating temperature, fan speeds and system voltages.




**BIOS Menu 7: Hardware Health Configuration**

- **CPU FAN Mode Setting [Full On Mode]**

Use the **CPU FAN Mode Setting** option to configure the second fan.

| | | |
|---|---|---|
| ➔ **Full On Mode** | **DEFAULT** | Fan is on all the time |
| ➔ **Automatic mode** | | Fan is off when the temperature is low enough. Parameters must be set by the user. |
| ➔ **PWM Manual mode** | | Pulse width modulation set manually |

When the **CPU FAN Mode Setting** option is in the **Automatic Mode**, the following parameters can be set.

- CPU Temp. Limit of OFF
- CPU Temp. Limit of Start
- CPU Fan Start PWM
- Slope PWM

When the **CPU FAN Mode Setting** option is in the **PWM Manual Mode**, the following parameters can be set.

- CPU Fan PWM control

- **CPU Temp. Limit of OFF [000]**

**WARNING:**

Setting this value too high may cause the fan to stop when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp Limit of OFF** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of OFF** option to select the CPU temperature at which the cooling fan should automatically turn off. To select a value, select the **CPU Temp. Limit of OFF** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

- **CPU Temp. Limit of Start [020]**

**WARNING:**

Setting this value too high may cause the fan to start only when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp Limit of Start** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of Start** option to select the CPU temperature at which the cooling fan should automatically turn on. When the fan starts, it rotates using the starting pulse width modulation (PWM) specified in the **Fan 3 Start PWM** option below. To select a value, select the **CPU Temp. Limit of Start** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

- **CPU Fan Start PWM [070]**

  The **Fan 3 Start PWM** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Fan 3 Start PWM** option to select the PWM mode the fan starts to rotate with after the temperature specified in the **Temperature 3 Limit of Start** is exceeded. The Super I/O chipset supports 128 PWM modes. To select a value, select the **Fan 3 Start PWM** option and enter a decimal number between 000 and 127. The temperature range is specified below.

  - PWM Minimum Mode: 0
  - PWM Maximum Mode: 127

- **Slope PWM [0.5 PWM]**

  The **Slope PWM 1** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Slope PWM 1** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. A list of available options is shown below:

  - 0.125 PWM
  - 0.25 PWM
  - 0.5 PWM
  - 1 PWM
  - 2 PWM
  - 4 PWM
  - 8 PWM
  - 15 PWM

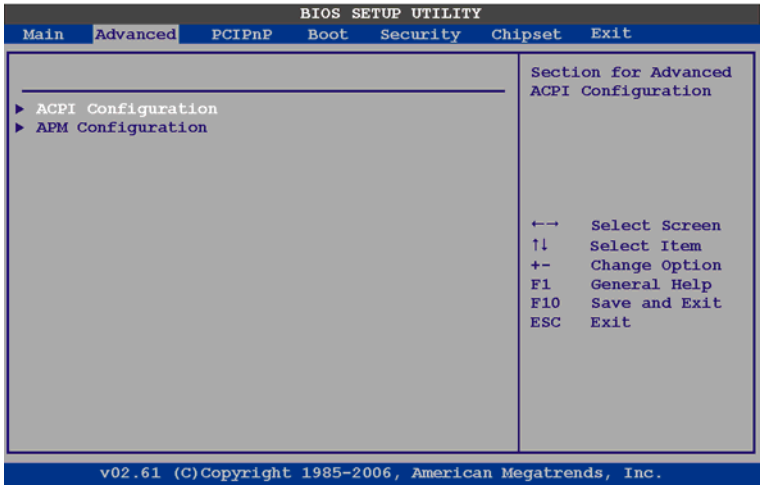
  The following system parameters and values are shown. The system parameters that are monitored are:

  - **System Temperatures**: The following system temperatures are monitored
    - CPU Temperature
    - System Temperature
  - **Fan Speeds**: The CPU cooling fan speed is monitored.
    - CPU Fan Speed
  - **Voltages**: The following system voltages are monitored

- CPU Core
- +1.05V
- +3.30V
- +5.00V
- +12.0 V
- +1.5V
- +1.8V
- 5VSB
- VBAT

### 6.3.5 Power Configuration

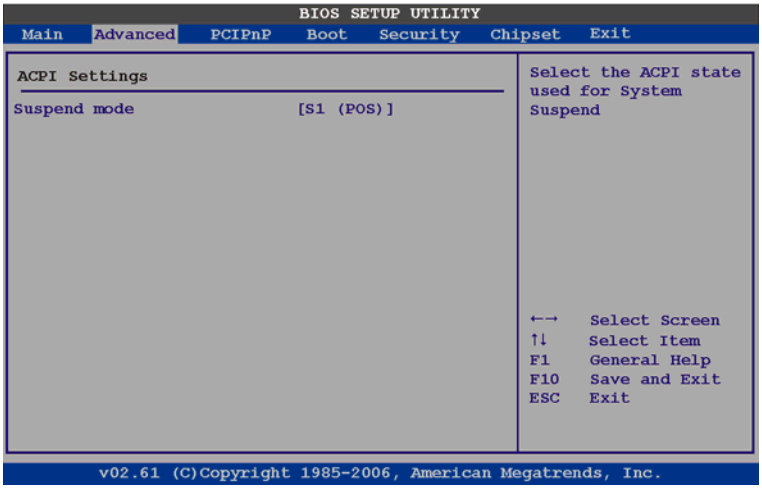
The **Power Configuration** menu (**BIOS Menu 8**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.




**BIOS Menu 8: Power Configuration**

#### 6.3.5.1 ACPI configuration

The **ACPI Configuration** menu (**BIOS Menu 9**) configures the Advanced Configuration and Power Interface (ACPI).


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
ACPI Settings
Suspend mode [S1 (POS)]
Select the ACPI state used for System Suspend
←→ Select Screen
↑↓ Select Item
F1 General Help
F10 Save and Exit
ESC Exit
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**BIOS Menu 9: ACPI Configuration**

- **Suspend Mode [S1(POS)]**

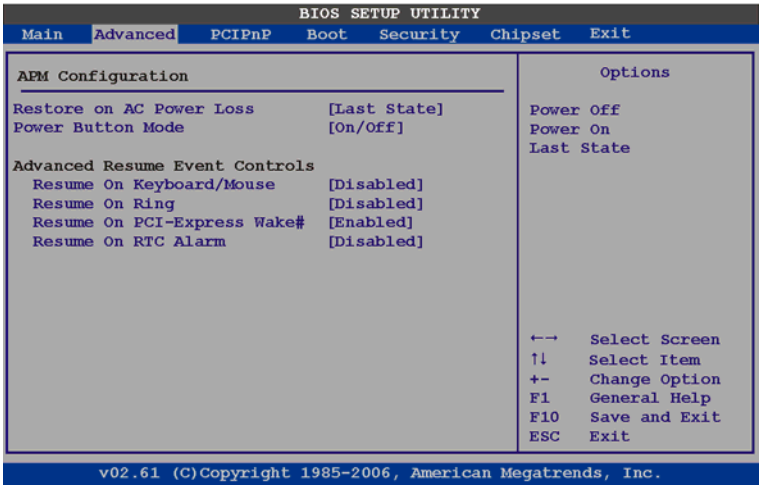
Use the **Suspend Mode** BIOS option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)** **DEFAULT** System appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

➔ **S3 (STR)** System appears off. The CPU has no power; RAM is in slow refresh; the power supply is in a reduced power mode.

### 6.3.6 APM Configuration

The **APM Configuration** menu (**BIOS Menu 10**) allows the advanced power management options to be configured.




**BIOS Menu 10: Advanced Power Management Configuration**

- **Restore on AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

| | | |
|---|---|---|
| ➔ **Power Off** | | The system remains turned off |
| ➔ **Power On** | | The system turns on |
| ➔ **Last State** | **DEFAULT** | The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off. |

- **Power Button Mode [On/Off]**

Use the **Power Button Mode** BIOS to specify how the power button functions.

| | | |
|---|---|---|
| ➔ **On/Off** | **DEFAULT** | When the power button is pressed the system is either turned on or off |
| ➔ **Suspend** | | When the power button is pressed the system goes into suspend mode |

- **Resume on Keyboard/Mouse [Disabled]**

Use the **Resume on Keyboard/Mouse** BIOS option to enable activity on either the keyboard or mouse to rouse the system from a suspend or standby state. That is, the system is roused when the mouse is moved or a button on the keyboard is pressed.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | **DEFAULT** | Wake event not generated by activity on the keyboard or mouse |
| ➔ | **Resume On KeyBoard** | | Wake event not generated by activity on the keyboard |
| ➔ | **Resume On Mouse** | | Wake event not generated by activity on the mouse |
| ➔ | **Enabled** | | Wake event generated by activity on the keyboard or mouse |

- **Resume on Ring [Disabled]**

Use the **Resume on Ring** BIOS option to enable activity on the RI (ring in) modem line to rouse the system from a suspend or standby state. That is, the system will be roused by an incoming call on a modem.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | **DEFAULT** | Wake event not generated by an incoming call |
| ➔ | **Enabled** | | Wake event generated by an incoming call |

- **Resume on PCI-Express WAKE# [Enabled]**

Use the **Resume PCI-Express WAKE#** BIOS option to enable activity on the PCI-Express WAKE# signal to rouse the system from a suspend or standby state.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | | Wake event not generated by PCI-Express WAKE# signal activity |
| ➔ | **Enabled** | **DEFAULT** | Wake event generated by PCI-Express WAKE# signal activity |

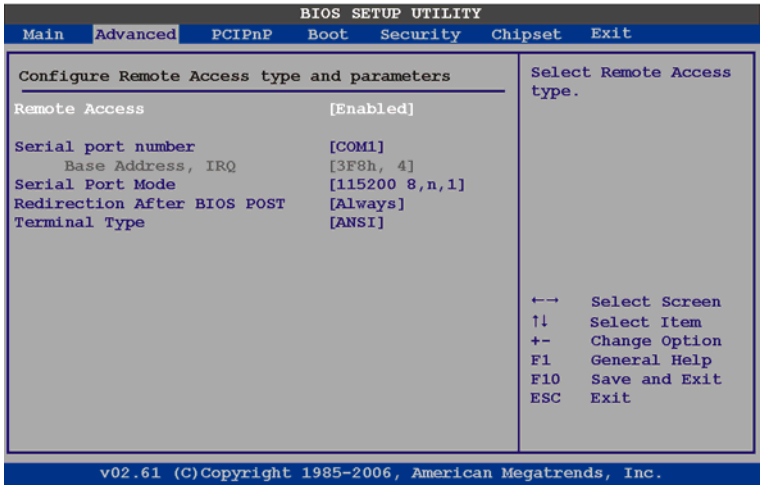
- **Resume On RTC Alarm [Disabled]**

Use the **Resume On RTC Alarm** option to specify the time the system should be roused from a suspended state.

| | | |
|---|---|---|
| ➔ **Disabled** | **DEFAULT** | The real time clock (RTC) cannot generate a wake event |
| ➔ **Enabled** | | If selected, the following appears with values that can be selected:<br>▪ **RTC Alarm Date (Days)**<br>▪ **System Time**<br>After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off. |

## 6.3.7 Remote Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 11**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Configure Remote Access type and parameters
Remote Access [Enabled]
Serial port number [COM1]
Base Address, IRQ [3F8h, 4]
Serial Port Mode [115200 8,n,1]
Redirection After BIOS POST [Always]
Terminal Type [ANSI]
Select Remote Access type.
←→ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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**BIOS Menu 11: Remote Access Configuration [Advanced]**

- **Remote Access [Disabled]**

  Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

  | | | |
  |---|---|---|
  | ➔ **Disabled** | **DEFAULT** | Remote access is disabled. |
  | ➔ **Enabled** | | Remote access configuration options shown below appear:<br>▪ **Serial Port Number**<br>▪ **Serial Port Mode**<br>▪ **Redirection after BIOS POST**<br>▪ **Terminal Type**<br>These configuration options are discussed below. |

- **Serial Port Number [COM1]**

  Use the **Serial Port Number** option to select the serial port used for remote access.

  | | | |
  |---|---|---|
  | ➔ **COM1** | **DEFAULT** | System is remotely accessed through COM1 |
  | ➔ **COM2** | | System is remotely accessed through COM2 |
  | ➔ **COM3** | | System is remotely accessed through COM3 |

  **NOTE**: Make sure the selected COM port is enabled through the Super I/O configuration menu.

- **Base Address, IRQ [3F8h,4]**

  The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

- **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

➔ **NOTE:**

Identical baud rate setting musts be set on the host (a management computer running a terminal software) and the slave

- **Redirection After BIOS POST [Always]**

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | | The console is not redirected after POST |
| ➔ | **Boot Loader** | | Redirection is active during POST and during Boot Loader |
| ➔ | **Always** | **DEFAULT** | Redirection is always active (Some OSes may not work if set to Always) |

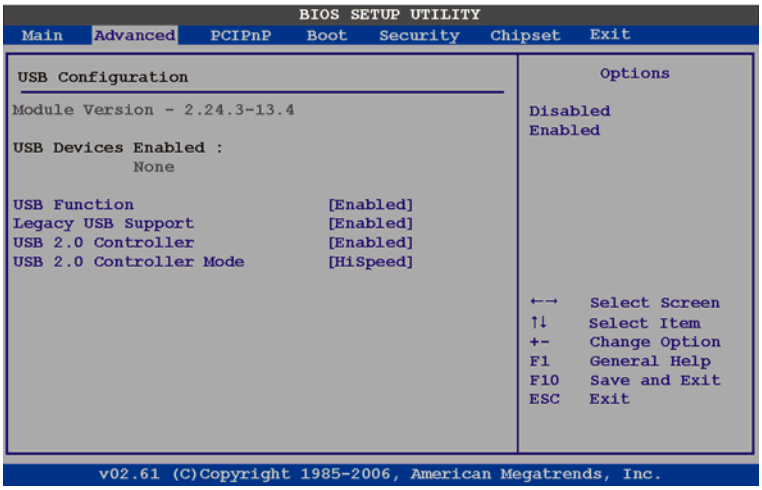
- **Terminal Type [ANSI]**

Use the **Terminal Type** BIOS option to specify the remote terminal type.

| | | | |
|---|---|---|---|
| ➔ | **ANSI** | **DEFAULT** | The target terminal type is ANSI |
| ➔ | **VT100** | | The target terminal type is VT100 |
| ➔ | **VT-UTF8** | | The target terminal type is VT-UTF8 |

### 6.3.8 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 12**) to read USB configuration information and configure the USB settings.




**BIOS Menu 12: USB Configuration**

- **USB Functions [Enabled]**

Use the **USB Function** option to enable or disable the USB controllers.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | | USB controllers are enabled |
| ➔ | **Enabled** | **DEFAULT** | USB controllers are disabled |

- **USB 2.0 Controller [Enabled]**

The **USB 2.0 Controller** BIOS option enables or disables the USB 2.0 controller

| | | | |
|---|---|---|---|
| ➔ | **Enabled** | **DEFAULT** | USB function enabled |
| ➔ | **Disabled** | | USB function disabled |

- **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | | Legacy USB support disabled |
| ➔ | **Enabled** | **DEFAULT** | Legacy USB support enabled |
| ➔ | **Auto** | | Legacy USB support disabled if no USB devices are connected |

- **USB2.0 Controller Mode [HiSpeed]**

The **USB2.0 Controller Mode** BIOS option sets the speed of the USB2.0 controller.

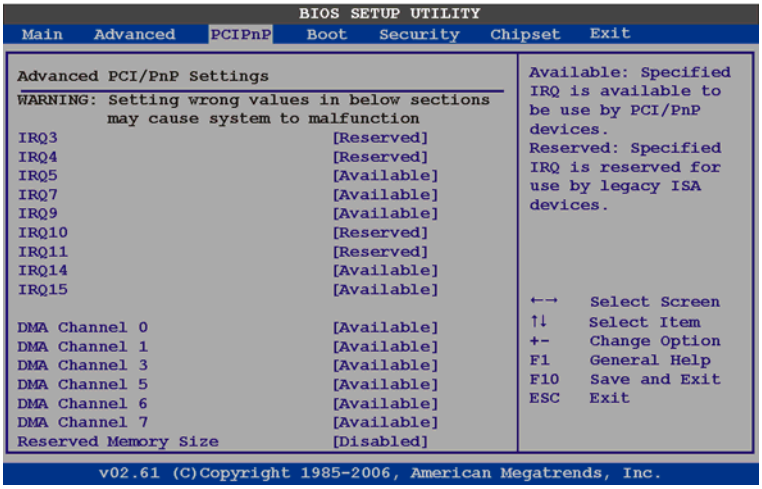
| | | | |
|---|---|---|---|
| ➔ | **FullSpeed** | | The controller is capable of operating at full speed 12 Mb/s |
| ➔ | **HiSpeed** | **DEFAULT** | The controller is capable of operating at high speed 480 Mb/s |

## 6.4 PCI/PnP

Use the PCI/PnP menu (**BIOS Menu 13**) to configure advanced PCI and PnP settings.

**WARNING:**

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction
IRQ3 [Reserved]
IRQ4 [Reserved]
IRQ5 [Available]
IRQ7 [Available]
IRQ9 [Available]
IRQ10 [Reserved]
IRQ11 [Reserved]
IRQ14 [Available]
IRQ15 [Available]
DMA Channel 0 [Available]
DMA Channel 1 [Available]
DMA Channel 3 [Available]
DMA Channel 5 [Available]
DMA Channel 6 [Available]
DMA Channel 7 [Available]
Reserved Memory Size [Disabled]
Available: Specified IRQ is available to be use by PCI/PnP devices.
Reserved: Specified IRQ is reserved for use by legacy ISA devices.
←→ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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**BIOS Menu 13: PCI/PnP Configuration**

- **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

- **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

| | | | |
|---|---|---|---|
| ➔ | **Available** | **DEFAULT** | The specified DMA is available to be used by PCI/PnP devices |
| ➔ | **Reserved** | | The specified DMA is reserved for use by Legacy ISA devices |

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

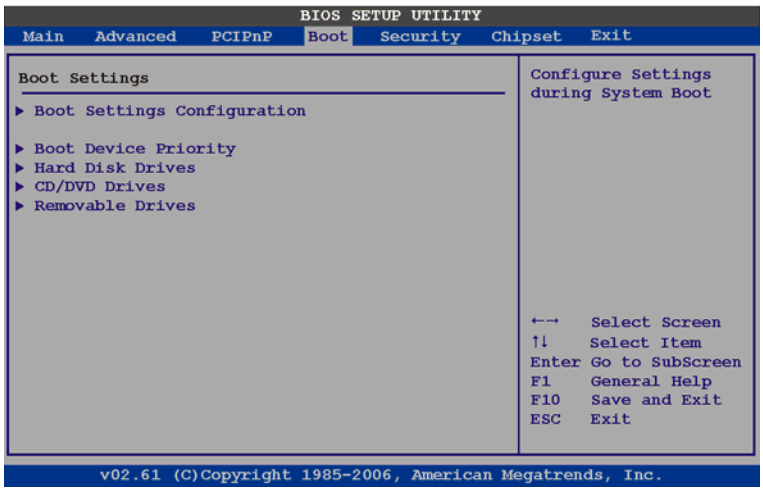
- **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | **DEFAULT** | No memory block reserved for legacy ISA devices |
| ➔ | **16K** | | 16KB reserved for legacy ISA devices |
| ➔ | **32K** | | 32KB reserved for legacy ISA devices |
| ➔ | **64K** | | 54KB reserved for legacy ISA devices |

## 6.5 Boot

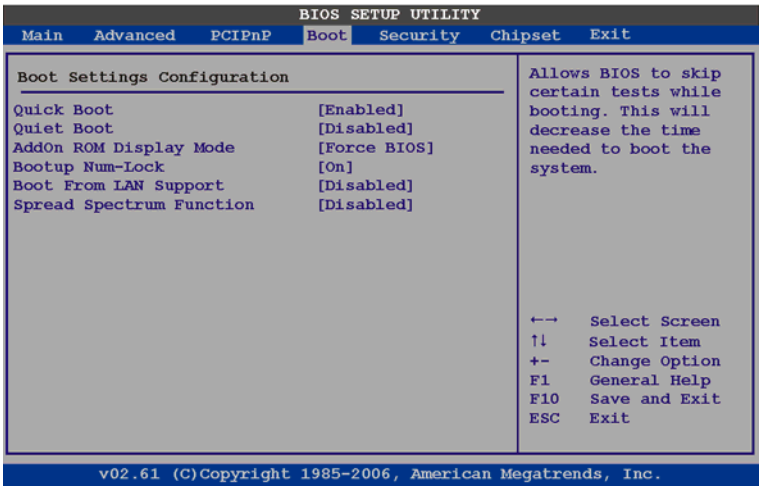
Use the Boot menu (**BIOS Menu 14**) to configure system boot options.




**BIOS Menu 14: Boot**

### 6.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (**BIOS Menu 15**) to configure advanced system boot options.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Disabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
Boot From LAN Support [Disabled]
Spread Spectrum Function [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
←→ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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**BIOS Menu 15: Boot Settings Configuration**

- **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled** No POST procedures are skipped

➔ **Enabled** **DEFAULT** Some POST procedures are skipped to decrease the system boot time

- **Quiet Boot [Disabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled** **DEFAULT** Normal POST messages displayed

➔ **Enabled** OEM Logo displayed instead of POST messages

- **AddOn ROM Display Mode [Force BIOS]**

The **AddOn ROM Display Mode** option allows add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS** **DEFAULT** Allows the computer system to force a third party BIOS to display during system boot.

➔ **Keep Current** Allows the computer system to display the information during system boot.

- **Bootup Num-Lock [On]**

The **Bootup Num-Lock** BIOS option allows the Number Lock setting to be modified during boot up.

➔ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number

Lock LED light on the keyboard is lit.

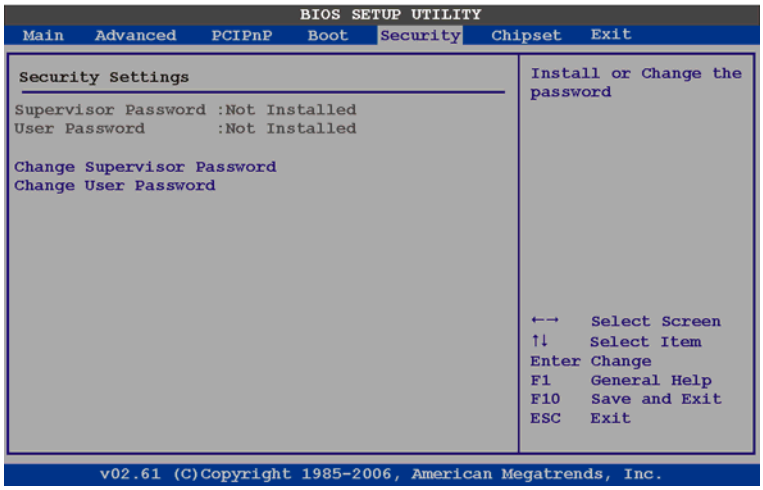
- **Boot From LAN Support [Disabled]**

The **BOOT From LAN Support** option enables the system to be booted from a remote system.

| | | |
|---|---|---|
| ➔ **Enabled** | | Can be booted from a remote system through the LAN |
| ➔ **Disabled** | **DEFAULT** | Cannot be booted from a remote system through the LAN |

## 6.6 Security

Use the Security menu (**BIOS Menu 16**) to set system and user passwords.




**BIOS Menu 16: Security**

- **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

- **Change User Password**

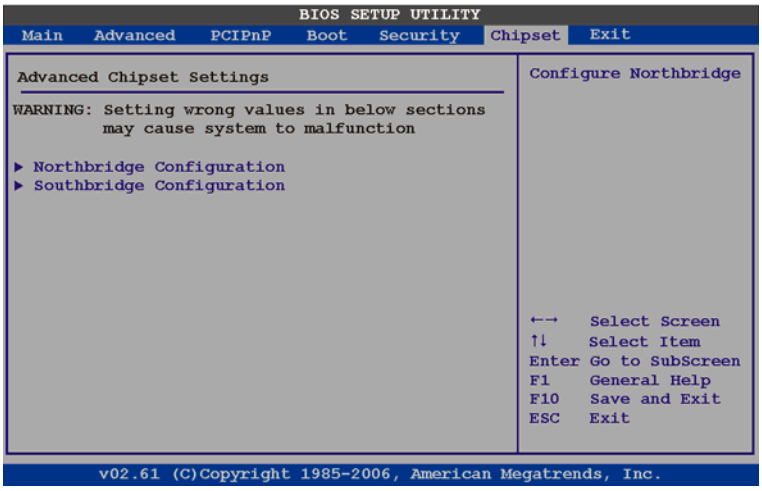
Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

## 6.7 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the Northbridge and Southbridge configuration menus

**WARNING!**

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below sections may cause system to malfunction
▶ Northbridge Configuration
▶ Southbridge Configuration
Configure Northbridge
←→ Select Screen
↑↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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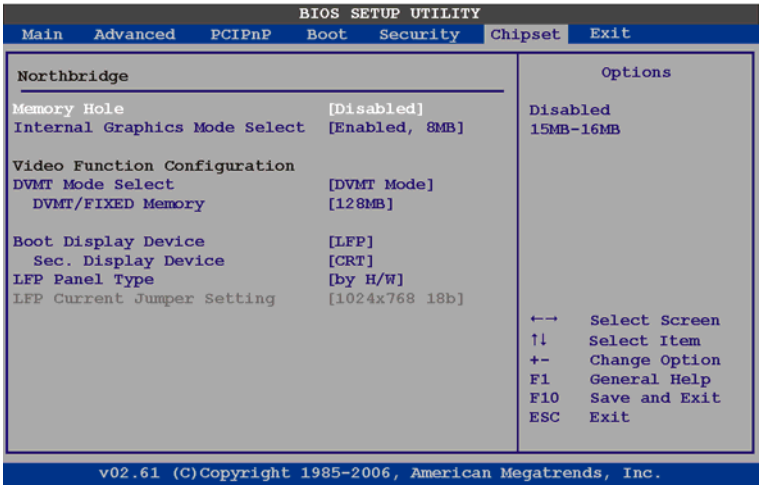
**BIOS Menu 17: Chipset**

### 6.7.1 Northbridge Chipset Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 18**) to configure the Northbridge chipset settings.




**BIOS Menu 18:Northbridge Chipset Configuration**

- **Memory Hole [Disabled]**

The **Memory Hole** reserves the memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | **DEFAULT** | Memory is not reserved for ISA expansion cards |
| ➔ | **Enabled** | | Memory is reserved for ISA expansion cards |

- **Internal Graphics Mode Select [Enable, 8MB]**

The **Internal Graphic Mode Select** option determines the amount of system memory that can be used by the internal graphics device.

| | | | |
|---|---|---|---|
| ➔ | **Disable** | | |
| ➔ | **Enable, 1MB** | | 1MB of memory used by internal graphics device |
| ➔ | **Enable, 8MB** | **DEFAULT** | 8MB of memory used by internal graphics device |

- **DVMT Mode Select [DVMT Mode]**

  Use the **DVMT Mode Select** option to select the Intel Dynamic Video Memory Technology (DVMT) operating mode.

  | | | |
  |---|---|---|
  | ➔ **Fixed Mode** | | A fixed portion of graphics memory is reserved as graphics memory. |
  | ➔ **DVMT Mode** | **DEFAULT** | Graphics memory is dynamically allocated according to the system and graphics needs. |
  | ➔ **Combo Mode** | | A fixed portion of graphics memory is reserved as graphics memory. If more memory is needed, graphics memory is dynamically allocated according to the system and graphics needs. |

- **DVMT/FIXED Memory**

  Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. This option can only be configured for if **DVMT Mode** or **Fixed Mode** is selected in the **DVMT Mode Selec**t option. If **Combo Mode** is selected, the maximum amount of graphics memory is 128MB. Configuration options are listed below.

  - 64MB
  - 128MB **DEFAULT**
  - Maximum DVMT

- **Boot Display Device [LFP]**

  Use the **Boot Display Device** option to select the display device used by the system when it boots. Configuration options are listed below.

  - CRT
  - LFP **DEFAULT**

- **Sec. Display Device [CRT]**

  Use the **Sec. Display Device** option to select the second display device used by the system. Configuration options are listed below.

  - Disabled
  - CRT **DEFAULT**

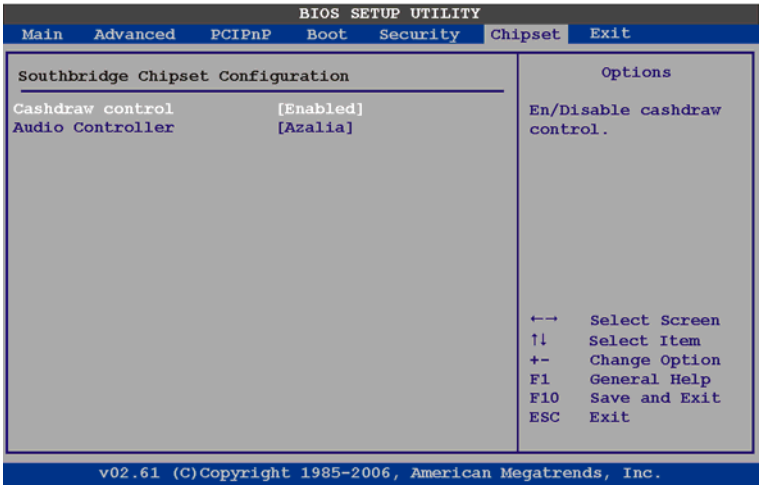
- **LFP Panel Type [by H/W]**

  Use the **LFP Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

  - 640x480 18b
  - 800x480 18b
  - 800x600 18b
  - 1024x768 18b
  - 1280x1024 36b
  - 1400x1050 36b
  - 1440x900 36b
  - 1600x1200 36b
  - by H/W **DEFAULT**

### 6.7.2 Southbridge Configuration

The **Southbridge Configuration** menu (**BIOS Menu 19**) allows the Southbridge chipset to be configured.




**BIOS Menu 19: Southbridge Chipset Configuration**

- **Cashdraw Control [Disabled]**

The **Cashdraw Control** enables or disables the cashdraw control.

| | | | |
|---|---|---|---|
| ➔ | **Disabled** | **DEFAULT** | The cashdraw control is disabled. |
| ➔ | **Enabled** | | The cashdraw control is enabled. |

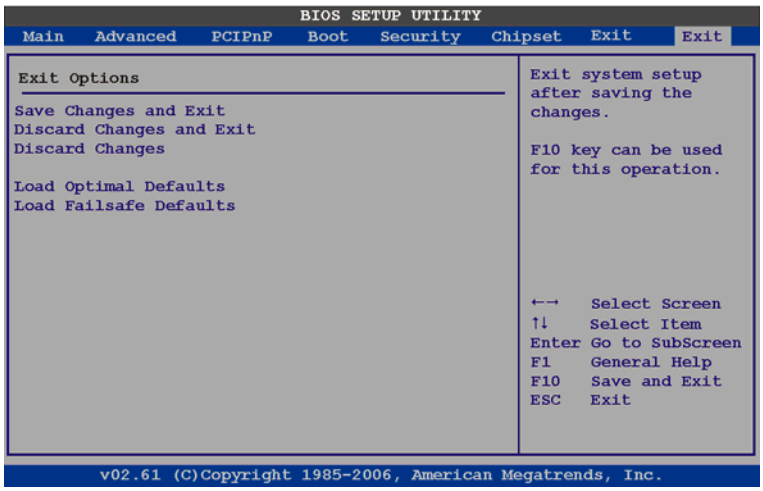
- **Audio Controller [AC'97 Audio Only]**

The **Audio Controller** option enables or disables the audio controller.

| | | | |
|---|---|---|---|
| ➔ | **Azalia** | | The Azalia HD audio controller is enabled |
| ➔ | **AC'97 Audio Only** | | The on-board AC'97 audio controller is enabled. |
| ➔ | **All Disabled** | **DEFAULT** | The on-board audio controller is disabled. |

## 6.8 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
←→ Select Screen
↑↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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**BIOS Menu 20:Exit**

- **Save Changes and Exit**

  Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

- **Discard Changes and Exit**

  Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

- **Discard Changes**

  Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

- **Load Optimal Defaults**

  Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

- **Load Failsafe Defaults**

  Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

7

# Software Drivers

## 7.1 Available Software Drivers

**NOTE:**

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- Chipset
- VGA
- Audio
- LAN
- Touch screen
- Bluetooth
- Wireless
- KeypadAP
- PC Camera

Installation instructions are given below.

## 7.2 Starting the Driver Program

To access the driver installation programs, please do the following.

**Step 1:** Insert the CD-ROM that came with the system into a CD-ROM drive attached to the system.

**Step 2:** The screen in **Figure 7-1** appears.

**Figure 7-1: Start Up Screen**

**Step 3:** Select the **AFL-4 Series-N270** model.

**Step 4:** The list of drivers in **Figure 7-2** appears.

**Figure 7-2: Drivers**

## 7.3 Chipset Driver Installation

To install the chipset driver, please do the following.

**Step 1:** Access the driver list shown in **Figure 7-2**. (See **Section 7.2**)

**Step 2:** Click "**NB**" and double click "**Setup.exe**".

**Step 3:** The setup files are extracted as shown in **Figure 7-3**.

**Figure 7-3: Chipset Driver Screen**

**Step 4:** When the setup files are completely extracted the **Welcome Screen** in **Figure 7-4** appears.

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all Windows* programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

**Figure 7-4: Chipset Driver Welcome Screen**

**Step 5:** Click NEXT to continue.

**Step 6:** The license agreement in **Figure 7-5** appears.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

**Figure 7-5: Chipset Driver License Agreement**

**Step 7:** Read the **License Agreement**.

**Step 8:** Click the YES button to accept the license agreement and continue.

**Step 9:** The Read Me file in **Figure 7-6** appears.

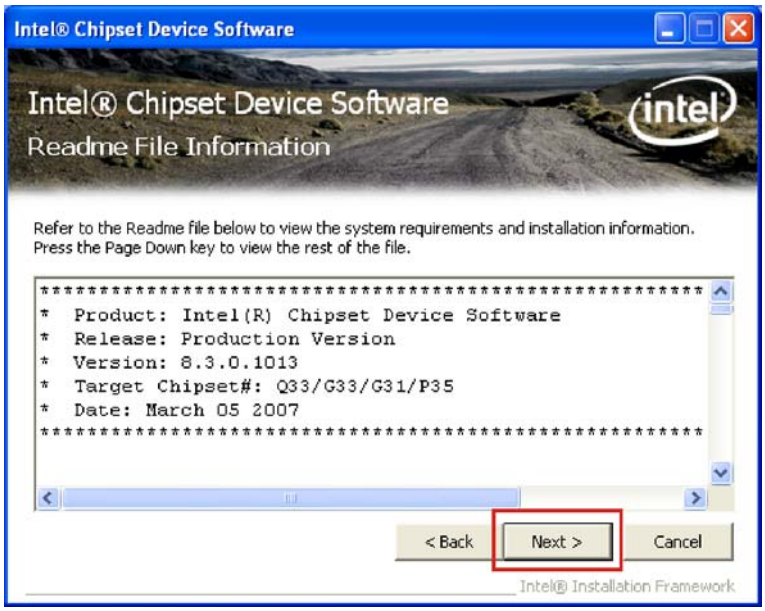
Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
intel
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
**********
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 8.3.0.1013
* Target Chipset#: Q33/G33/G31/P35
* Date: March 05 2007
**********
< Back
Next >
Cancel
Intel® Installation Framework

**Figure 7-6: Chipset Driver Read Me File**

**Step 10:** Click NEXT to continue.

**Step 11:** **Setup Operations** are performed as shown in **Figure 7-7**.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
Version: 8.2.0.1008
Click Next to continue.
Next
Intel® Installation Framework

**Figure 7-7: Chipset Driver Setup Operations**

**Step 12:** Once the **Setup Operations** are complete, click the NEXT icon to continue.

**Step 13:** The **Finish** screen appears.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

**Figure 7-8: Chipset Driver Installation Finish Screen**

Select "**Yes, I want to restart the computer now**" and click the **Finish** icon. See **Figure**

**7-9**.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

**Figure 7-9: Chipset Driver Installation Finish Screen**

## 7.4 VGA Driver Installation

To install the VGA driver, please do the following.

**Step 1:** Access the driver list shown in **Figure 7-2**. (See **Section 7.2**)

**Step 2:** Click "**VGA**" and double click the "**Setup.exe**" file.

**Step 3:** The VGA Read Me file in **Figure 7-10** appears.

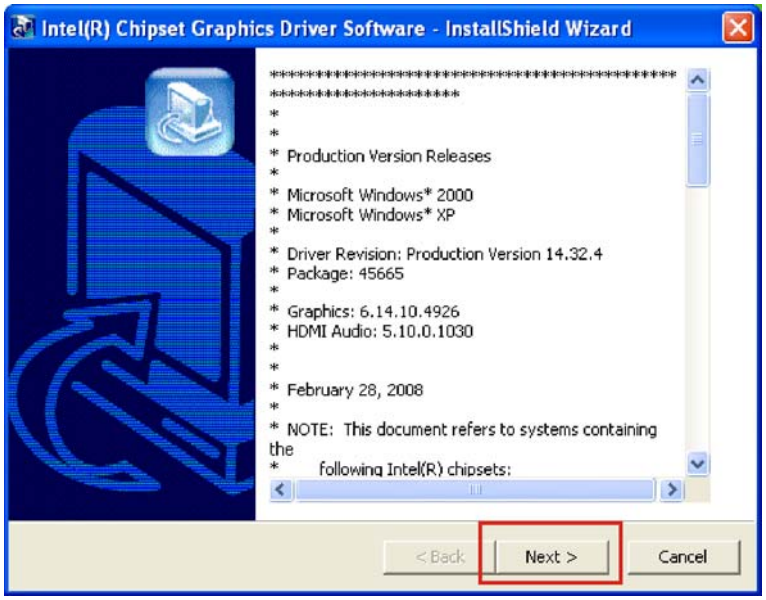


**Figure 7-10: VGA Driver Read Me File**

**Step 4:** Click NEXT to continue.

**Step 5:** The installation files are extracted. See **Figure 7-11**.

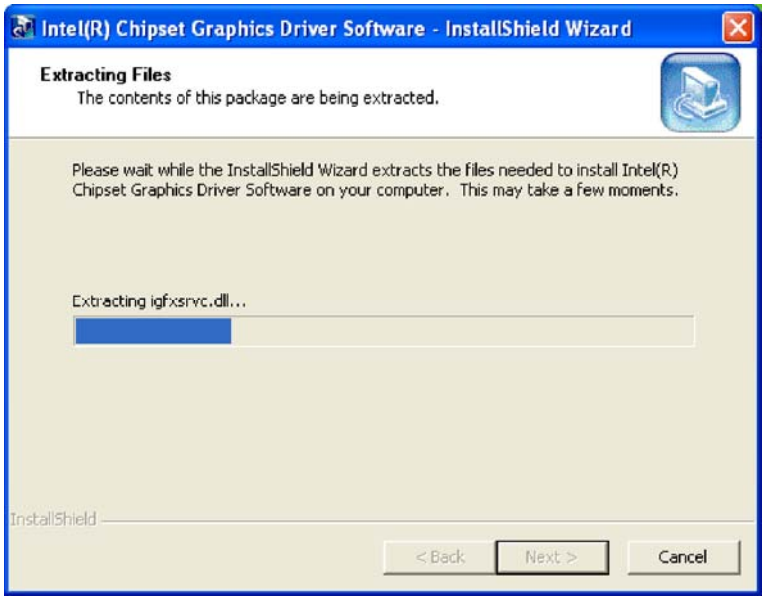
Intel(R) Chipset Graphics Driver Software - InstallShield Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield Wizard extracts the files needed to install Intel(R) Chipset Graphics Driver Software on your computer. This may take a few moments.
Extracting igfxsrvc.dll...
InstallShield
< Back
Next >
Cancel

**Figure 7-11: VGA Driver Setup Files Extracted**

**Step 6:** The **Welcome Screen** in **Figure 7-12** appears.

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Welcome to the Setup Program
This setup program will install the Intel® Graphics Media Accelerator Driver onto this computer. It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

**Figure 7-12: VGA Driver Welcome Screen**

**Step 7:** Click NEXT to continue.

**Step 8:** The license agreement in **Figure 7-13** appears.

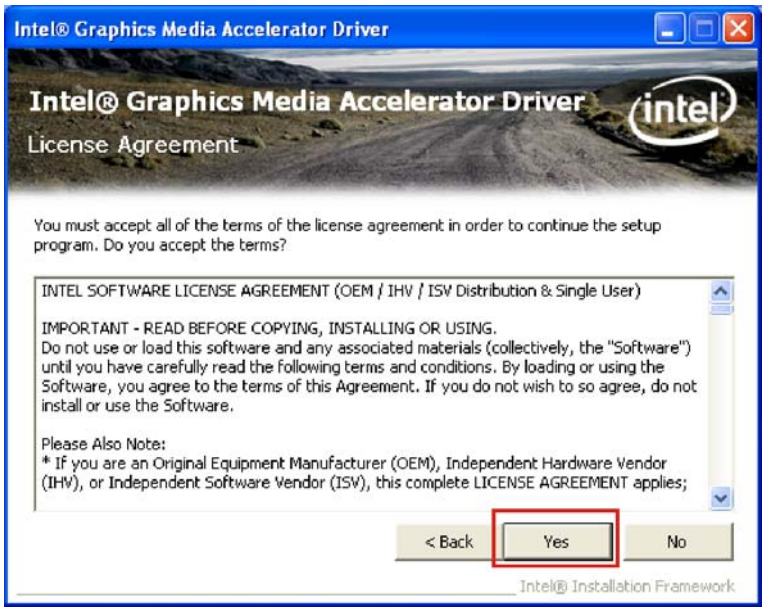
Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

**Figure 7-13: VGA Driver License Agreement**

**Step 9:** Read the **License Agreement**.

**Step 10:** Click **YES** to accept the license agreement and continue.

**Step 11:** The Readme file in **Figure 7-14** appears.

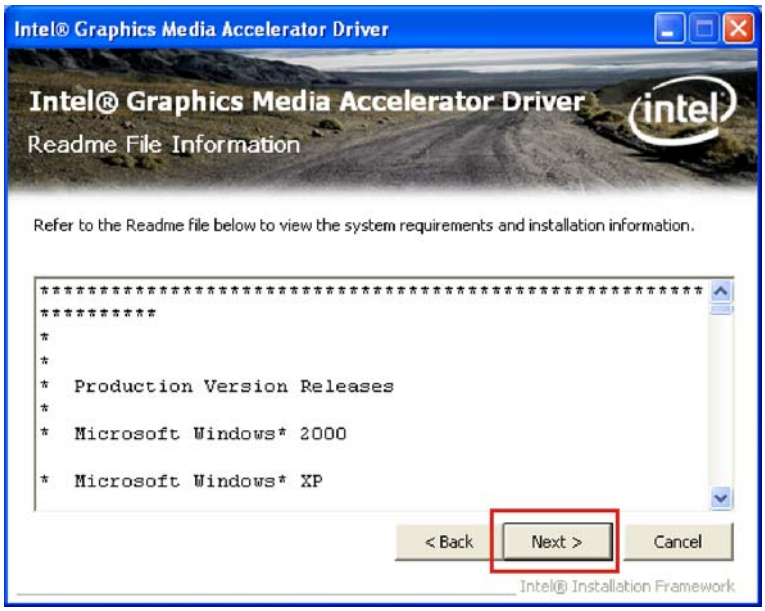


**Figure 7-14: VGA Driver Read Me File**

**Step 12:** Click **NEXT** to continue.

**Step 13:** **Setup Operations** are performed as shown in **Figure 7-15**.

**NOTE:**

The “Found New Hardware Wizard” will appear and then disappear during this step. Do not adjust any settings in the “Found New Hardware Wizard” window.

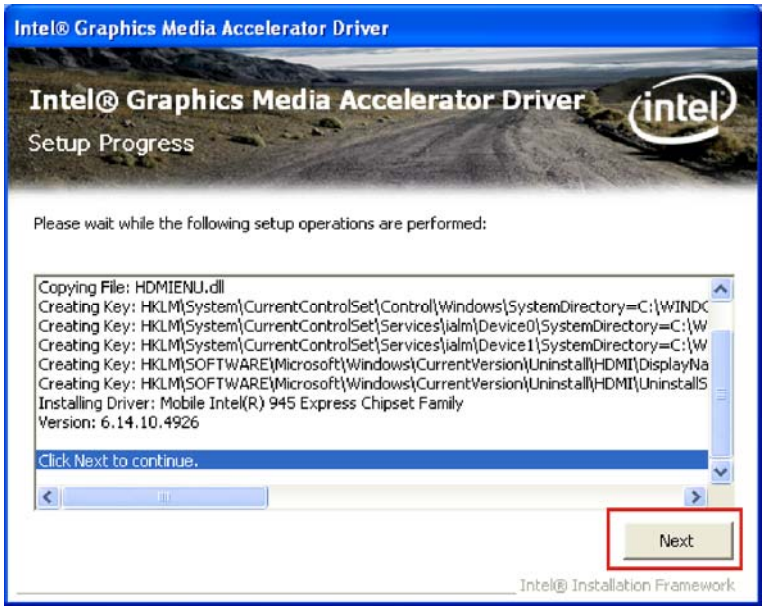


**Figure 7-15: VGA Driver Setup Operations**

**Step 14:** Once the **Setup Operations** are complete, click NEXT to continue.

**Step 15:** The **Finish** screen appears.

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

**Figure 7-16: VGA Driver Installation Finish Screen**

**Step 16:** Select "**Yes, I want to restart the computer now**" and click **FINISH**. See **Figure 7-16**.

## 7.5 Realtek HD Audio Driver (ALC883) Installation

To install the Realtek High Definition (HD) Audio driver, please follow the steps below.

### 7.5.1 BIOS Setup

**Step 1:** Enter the BIOS setup. To do this, reboot the system and press **DEL** during POST.

**Step 2:** Go to the Southbridge Configuration menu. Set the **Audio Controller** option to [Azalia].

**Step 3:** Press **F10** to save the changes and exit the BIOS setup. The system reboots.

### 7.5.2 Driver Installation

To install the audio driver please follow the steps below.

**Step 1:** Select **AUDIO** from the list in **Figure 7-2**.

**Step 2:** A new window opens. Double-click the **Setup.exe** program icon.

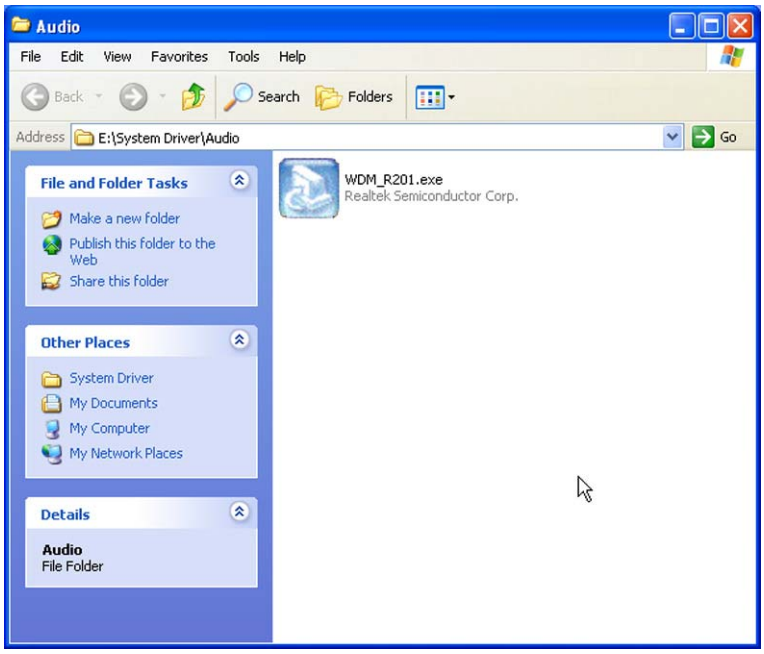


**Figure 7-17: Locate the Setup Program Icon**

**Step 3:** The **InstallShield Wizard** is prepared to guide the user through the rest of the process (**Figure 7-18**).

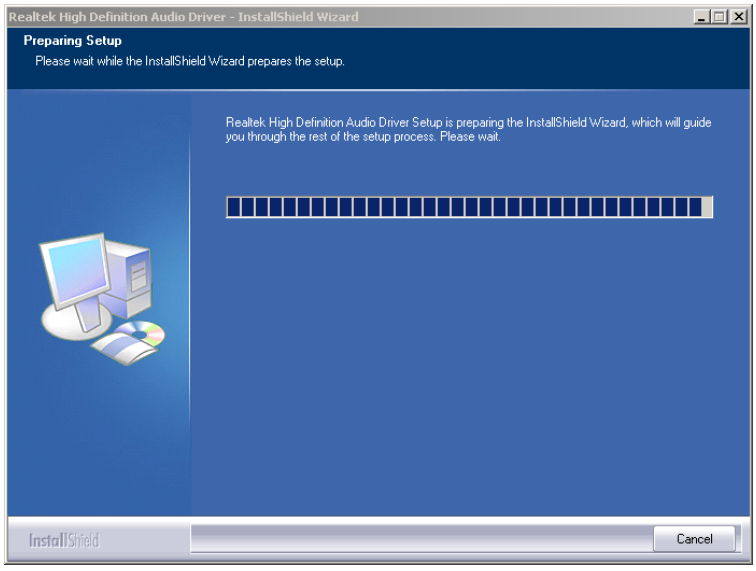
Realtek High Definition Audio Driver - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
Realtek High Definition Audio Driver Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

**Figure 7-18: Preparing Setup Screen**

**Step 4:** Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 7-19**).

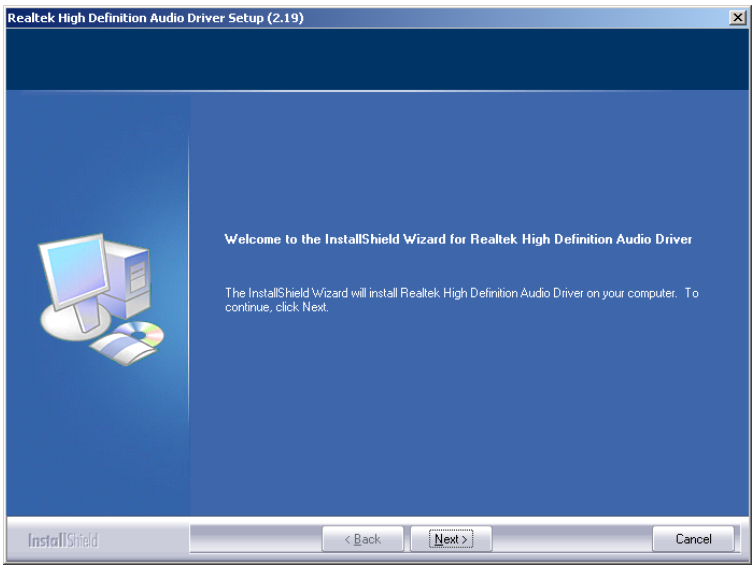
Realtek High Definition Audio Driver Setup (2.19)
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

**Figure 7-19: InstallShield Wizard Welcome Screen**

**Step 5:** Click **NEXT** to continue the installation.

**Step 6:** InstallShield starts to install the new software as shown in **Figure 7-20**.

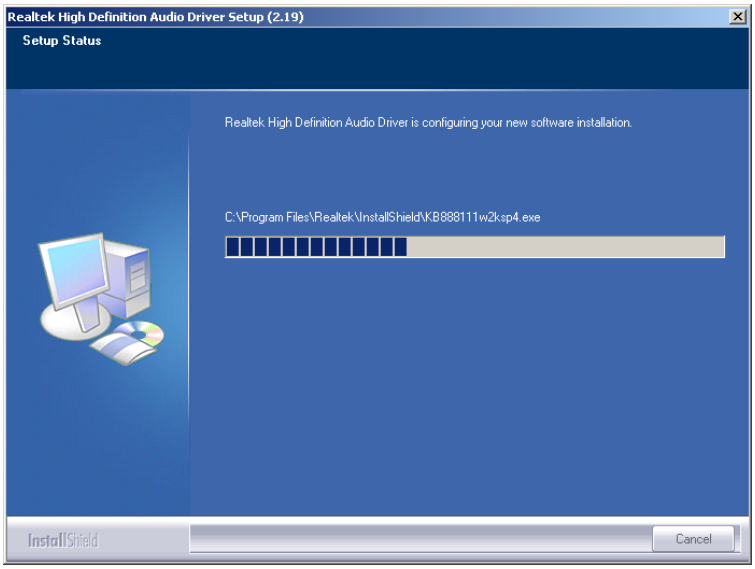
Realtek High Definition Audio Driver Setup (2.19)
Setup Status
Realtek High Definition Audio Driver is configuring your new software installation.
C:\Program Files\Realtek\InstallShield\KB888111w2ksp4.exe
InstallShield
Cancel

**Figure 7-20: Audio Driver Software Configuration**

**Step 7:** The Installation Wizard updates the system as shown in **Figure 7-21**.

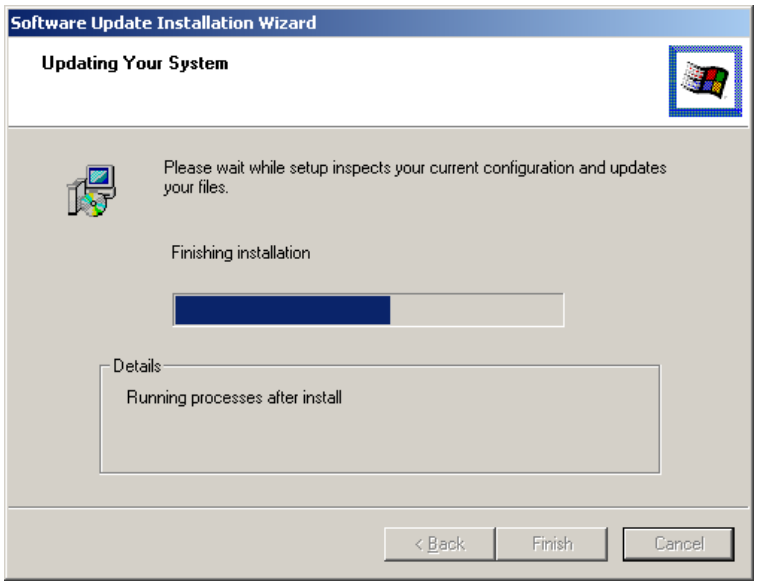


**Figure 7-21: Installation Wizard Updates the System**

**Step 8:** After the driver installation process is complete, a confirmation screen appears (**Figure 7-22**).

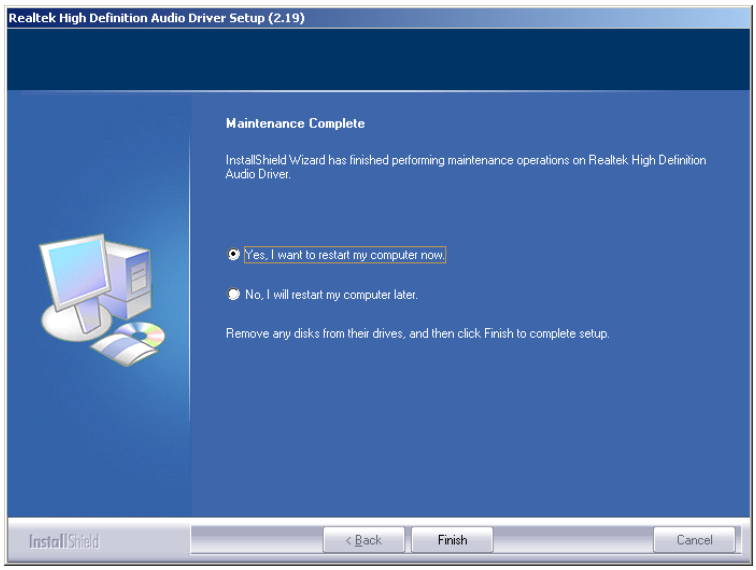
Realtek High Definition Audio Driver Setup (2.19)
Maintenance Complete
InstallShield Wizard has finished performing maintenance operations on Realtek High Definition Audio Driver.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

**Figure 7-22: Restart the Computer**

**Step 9:** The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

## 7.6 LAN Driver Installation

To install the LAN driver, please do the following.

**Step 1:** Access the driver list shown in **Figure 7-2**. (See **Section 7.2**)

**Step 2:** Click "**LAN**" and locate the **setup.exe**. Double click the setup.exe file to start installing the LAN driver.

**Step 3:** The **Welcome** screen in **Figure 7-23** appears.

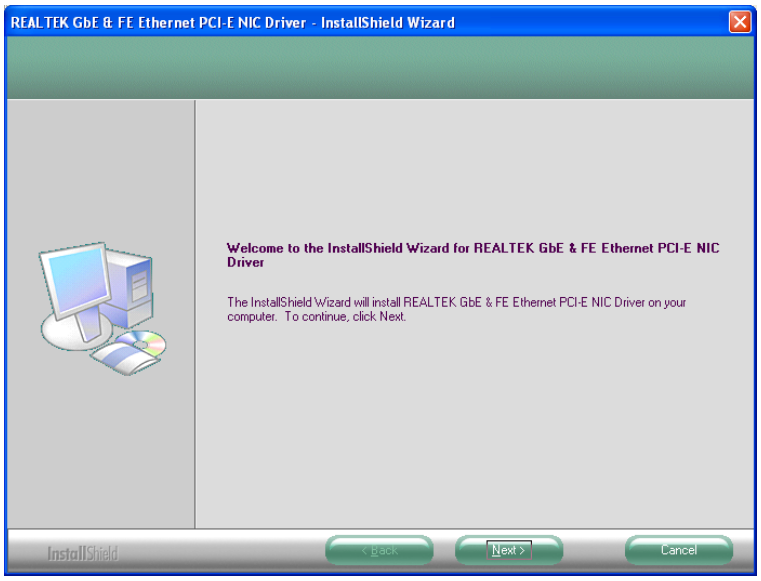
REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver
The InstallShield Wizard will install REALTEK GbE & FE Ethernet PCI-E NIC Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

**Figure 7-23: LAN Driver Welcome Screen**

**Step 4:** Click **Next** to continue.

**Step 5:** The **Ready to Install** screen in **Figure 7-24** appears.

**Step 6:** Click **Next** to proceed with the installation.

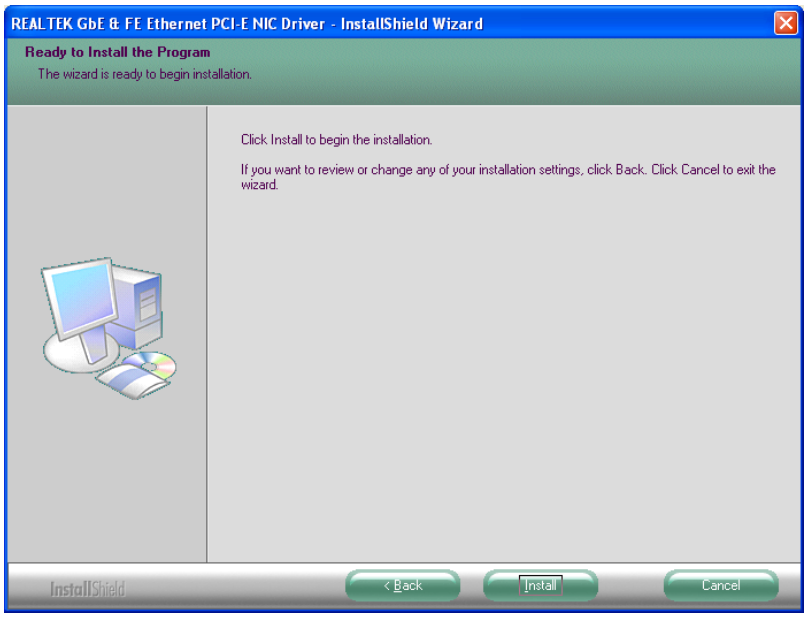
REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

**Figure 7-24: LAN Driver Welcome Screen**

**Step 7:** The program begins to install.

**Step 8:** The installation progress can be monitored in the progress bar shown in **Figure 7-25**.

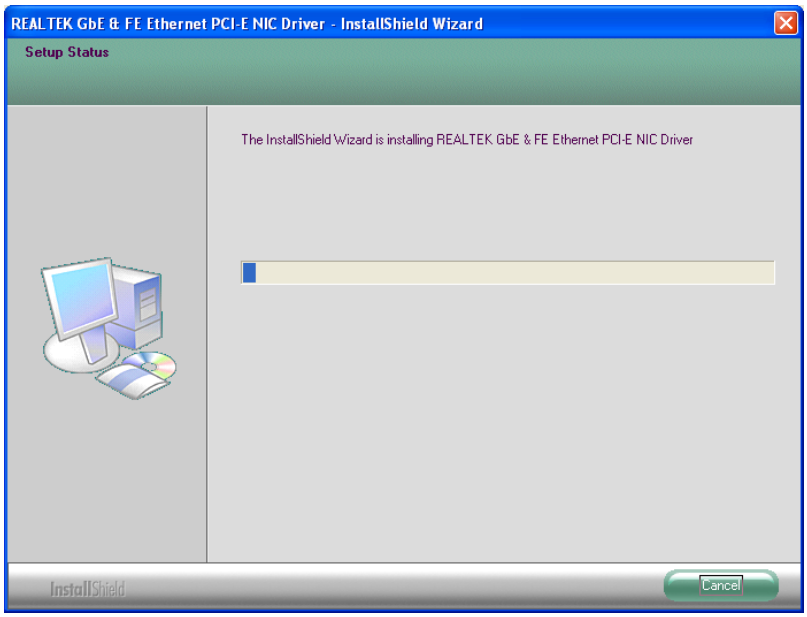
REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Setup Status
The InstallShield Wizard is installing REALTEK GbE & FE Ethernet PCI-E NIC Driver
InstallShield
Cancel

**Figure 7-25: LAN Driver Installation**

**Step 9:** When the driver installation is complete, the screen in **Figure 7-26** appears.

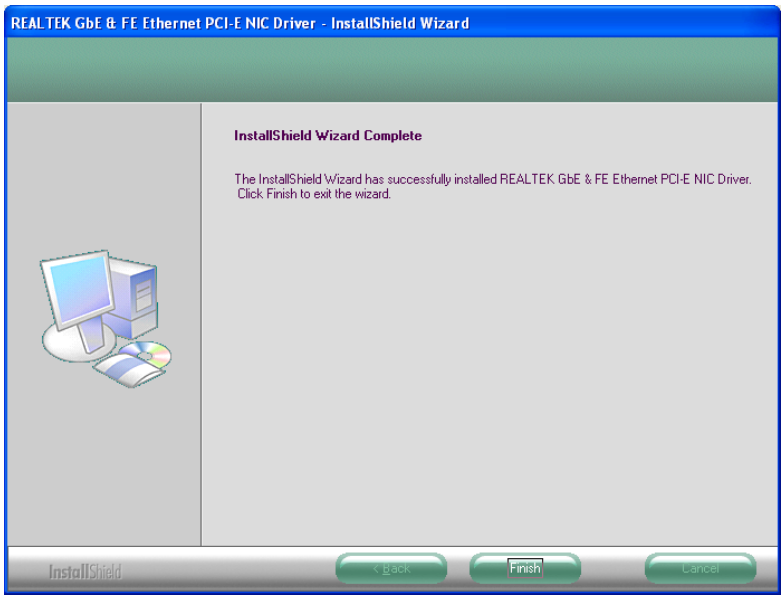
REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet PCI-E NIC Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

**Figure 7-26: LAN Driver Installation Complete**

## 7.7 Touch Screen Driver

To install the touch panel software driver, please follow the steps below.

**Step 1:** Access the driver list shown in **Figure 7-2**. (See **Section 7.2**)

**Step 2:** Click "**Touch Screen**". Double click the "**Setup.exe"** installation file.

**Step 3:** A welcome screen appears (**Figure 7-27**). To continue the installation process click **NEXT**.

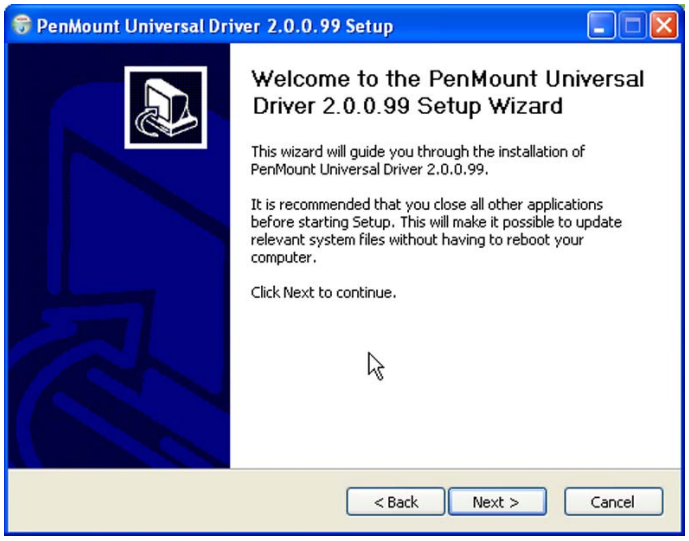
PenMount Universal Driver 2.0.0.99 Setup
Welcome to the PenMount Universal Driver 2.0.0.99 Setup Wizard
This wizard will guide you through the installation of PenMount Universal Driver 2.0.0.99.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
< Back
Next >
Cancel

**Figure 7-27: Welcome Screen**

**Step 4:** The license agreement shown in **Figure 7-28** appears. Agree to the license by selecting "I accept the terms in the license agreement".

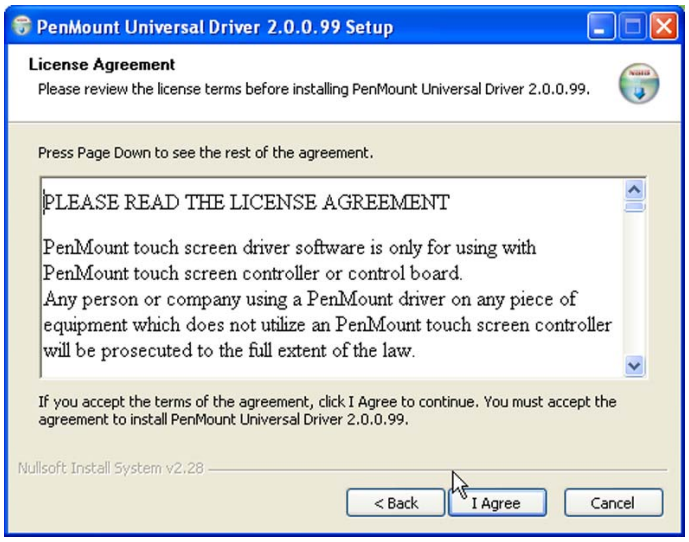
PenMount Universal Driver 2.0.0.99 Setup
License Agreement
Please review the license terms before installing PenMount Universal Driver 2.0.0.99.
Press Page Down to see the rest of the agreement.
PLEASE READ THE LICENSE AGREEMENT
PenMount touch screen driver software is only for using with PenMount touch screen controller or control board.
Any person or company using a PenMount driver on any piece of equipment which does not utilize an PenMount touch screen controller will be prosecuted to the full extent of the law.
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install PenMount Universal Driver 2.0.0.99.
Nullsoft Install System v2.28
< Back
I Agree
Cancel

**Figure 7-28: License Agreement**

**Step 5:** Click **NEXT** and the Installshield Wizard is ready to install the program (**Figure 7-29**).

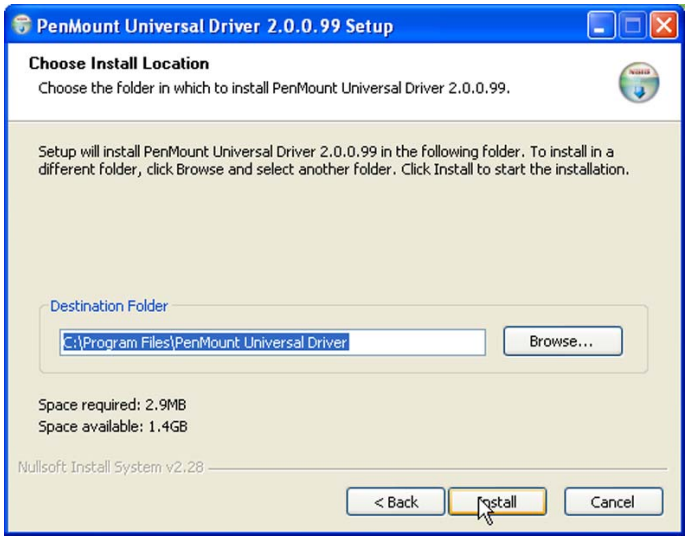
PenMount Universal Driver 2.0.0.99 Setup
Choose Install Location
Choose the folder in which to install PenMount Universal Driver 2.0.0.99.
Setup will install PenMount Universal Driver 2.0.0.99 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\Program Files\PenMount Universal Driver
Browse...
Space required: 2.9MB
Space available: 1.4GB
Nullsoft Install System v2.28
< Back
Install
Cancel

**Figure 7-29: Ready to Install the Program**

**Step 6:** Click **INSTALL** to continue. The Installing PenMount screen appears as the program is installed (**Figure 7-30**).

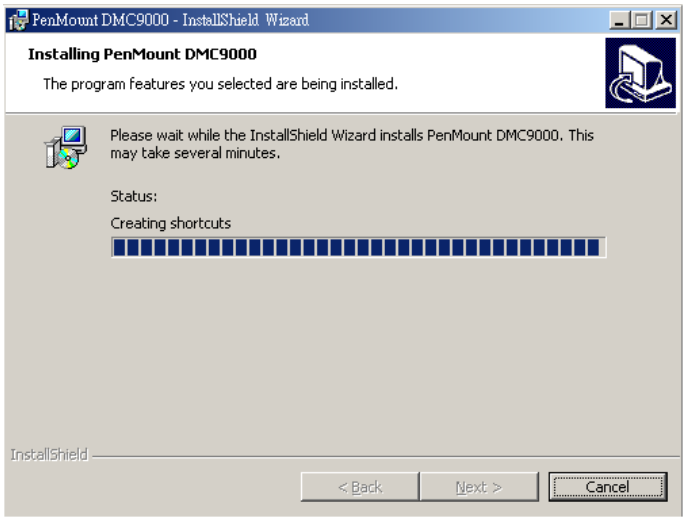
PenMount DMC9000 - InstallShield Wizard
Installing PenMount DMC9000
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs PenMount DMC9000. This may take several minutes.
Status:
Creating shortcuts
InstallShield
< Back
Next >
Cancel

**Figure 7-30: Installing PenMount DMC9000**

**Step 7:** The user is then prompted to select to restart the computer now or later (**Figure 7-31**). For the settings to take effect, the computer must be restarted. Click **Yes** to restart the computer.

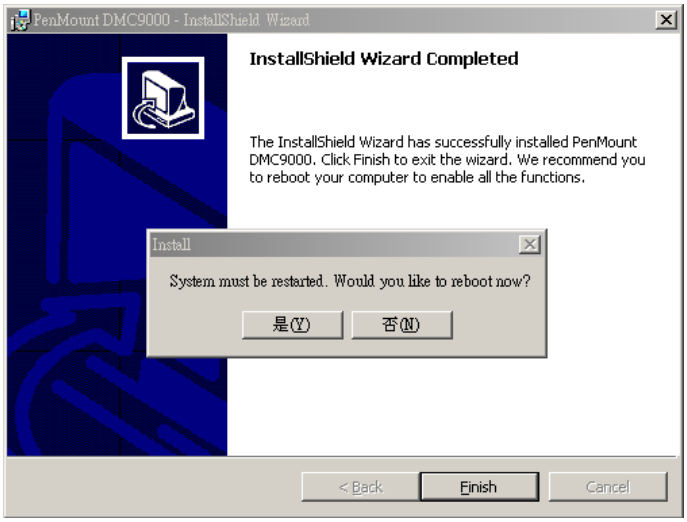
PenMount DMC9000 - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed PenMount DMC9000. Click Finish to exit the wizard. We recommend you to reboot your computer to enable all the functions.
Install
System must be restarted. Would you like to reboot now?
是(Y)
否(N)
< Back
Finish
Cancel

**Figure 7-31: Reboot the Computer**

## 7.8 Bluetooth Driver

To install the Bluetooth software driver, please follow the steps below.

**Step 1:** Select **Bluetooth** from the list in **Figure 7-2**.

**Step 2:** A new window opens (**Figure 7-32**). Click the **Setup.exe** to install the Bluetooth driver.

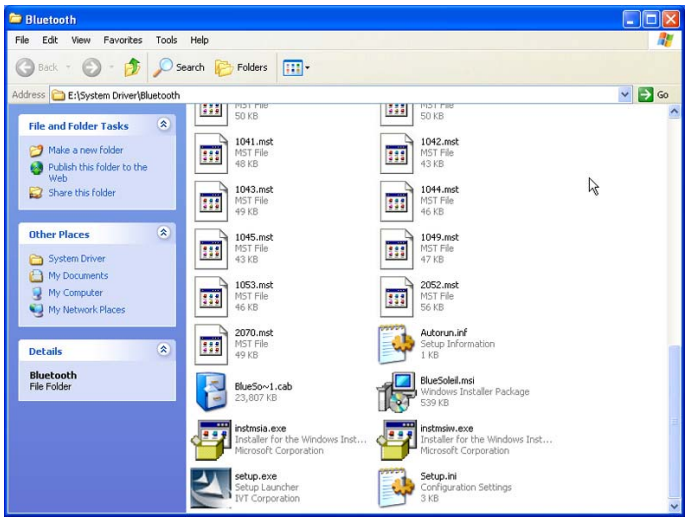


**Figure 7-32: Bluetooth Driver Icon**

**Step 3:** A welcome screen appears (**Figure 7-33**). To continue the installation process click **NEXT**.

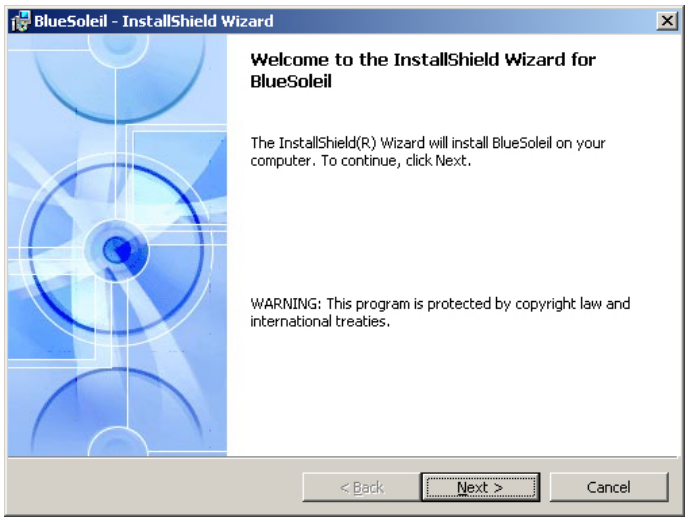
BlueSoleil - InstallShield Wizard
Welcome to the InstallShield Wizard for BlueSoleil
The InstallShield(R) Wizard will install BlueSoleil on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

**Figure 7-33: Welcome Screen**

**Step 4:** The license agreement shown in **Figure 7-34** appears. Agree to the license by selecting "I accept the terms in the license agreement".

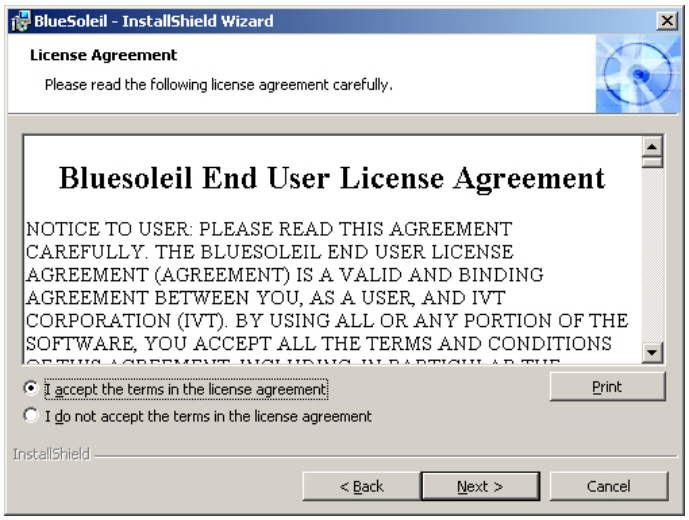
BlueSoleil - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Bluesoleil End User License Agreement
NOTICE TO USER: PLEASE READ THIS AGREEMENT CAREFULLY. THE BLUESOLEIL END USER LICENSE AGREEMENT (AGREEMENT) IS A VALID AND BINDING AGREEMENT BETWEEN YOU, AS A USER, AND IVT CORPORATION (IVT). BY USING ALL OR ANY PORTION OF THE SOFTWARE, YOU ACCEPT ALL THE TERMS AND CONDITIONS
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

**Figure 7-34: License Agreement**

**Step 5:** The **Custom Settings** screen in **Figure 7-35** appears next.

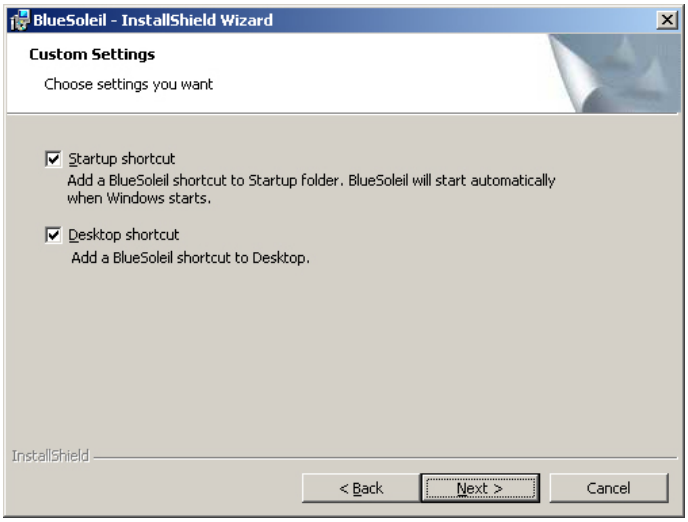
BlueSoleil - InstallShield Wizard
Custom Settings
Choose settings you want
Startup shortcut
Add a BlueSoleil shortcut to Startup folder. BlueSoleil will start automatically when Windows starts.
Desktop shortcut
Add a BlueSoleil shortcut to Desktop.
InstallShield
< Back
Next >
Cancel

**Figure 7-35: Bluetooth Driver Setup Options**

**Step 6:** Select the required installation configuration in **Figure 7-35** and click **NEXT** to continue.

**Step 7:** The **Destination Folder** screen in **Figure 7-36** appears next. Confirm the destination folder to install the Bluetooth driver.

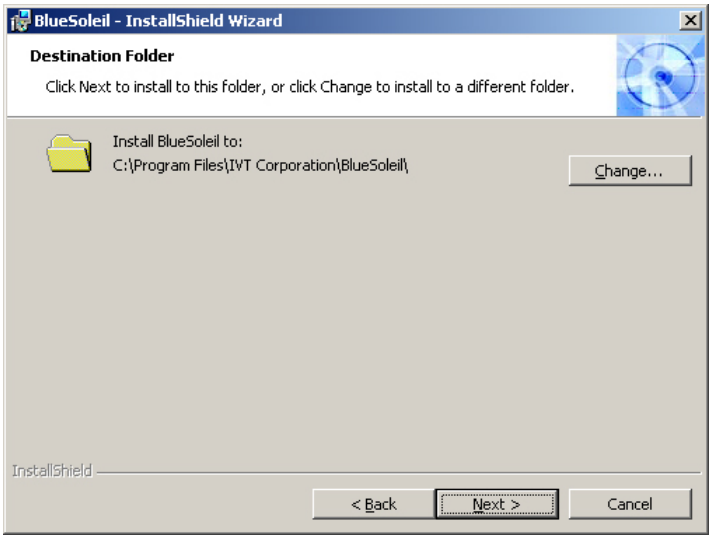


**Figure 7-36: Bluetooth Driver Destination Folder**

**Step 8:** Click **NEXT** and the Installshield Wizard is ready to install the program (**Figure 7-37**).

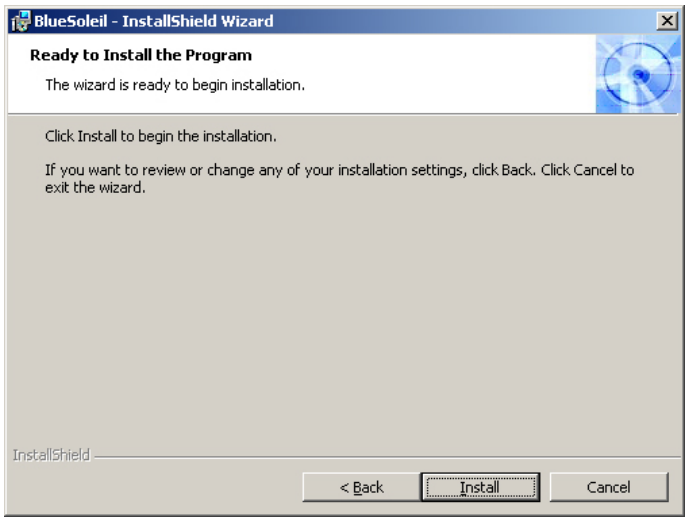
BlueSoleil - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

**Figure 7-37: Ready to Install the Program**

**Step 9:** Click **INSTALL** to continue. The Installing BlueSoleil screen appears as the program is installed (**Figure 7-38**).

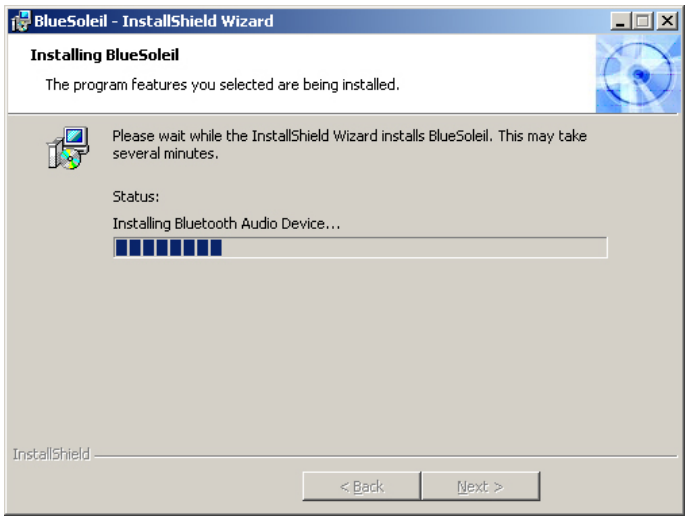
BlueSoleil - InstallShield Wizard
Installing BlueSoleil
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs BlueSoleil. This may take several minutes.
Status:
Installing Bluetooth Audio Device...
InstallShield
< Back
Next >

**Figure 7-38: Installing BlueSoleil**

**Step 10:** When the installation process is complete, the Setup Complete screen appears. See **Figure 7-39**.

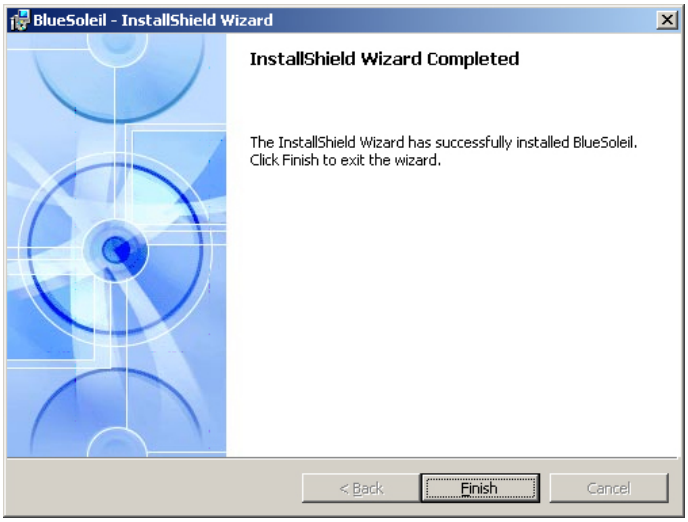
BlueSoleil - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed BlueSoleil. Click Finish to exit the wizard.
< Back
Finish
Cancel

**Figure 7-39: Bluetooth Driver Complete Installation Screen**

**Step 11:** To complete the chipset driver installation, click **FINISH**. The user is then prompted to select to restart the computer now or later (**Figure 7-40**). For the settings to take effect, the computer must be restarted. Click **Yes** to restart the computer.

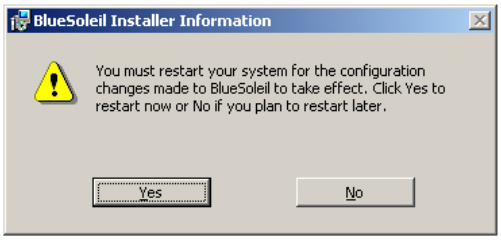
BlueSoleil Installer Information
You must restart your system for the configuration changes made to BlueSoleil to take effect. Click Yes to restart now or No if you plan to restart later.
Yes
No

**Figure 7-40: Reboot the Computer**

## 7.9 Wireless Driver

To install the wireless driver, please follow the steps below.

**Step 1:** Select **Wireless** from the list in **Figure 7-2**.

**Step 2:** A new window opens (**Figure 7-41**). Double click the **Wireless.exe** to install the LAN driver.

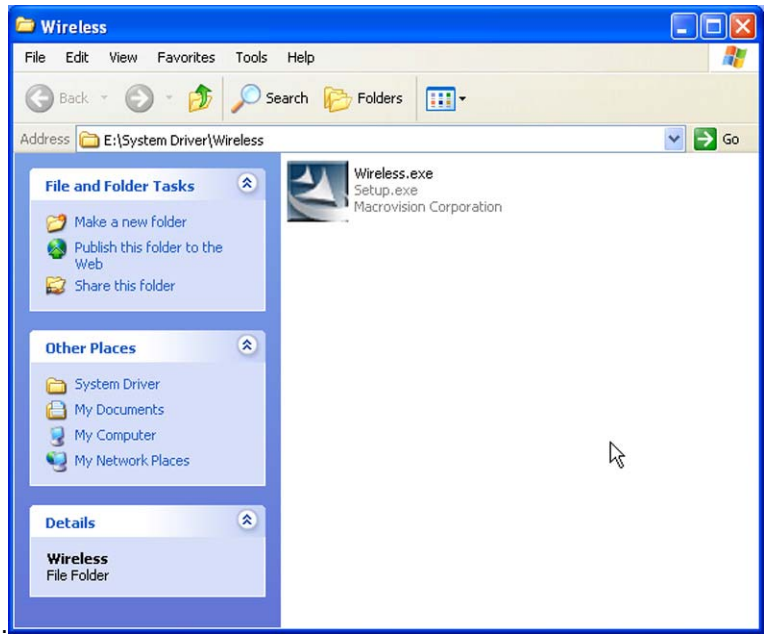


**Figure 7-41: Wireless Driver Folder**

**Step 3:** The license agreement in **Figure 7-42** appears.

Ralink Wireless LAN - InstallShield Wizard
授權合約
請仔細閱讀下面的授權合約。
RALINK Wireless Utility for Windows 98/ME/2000/XP/Vista
Copyright (C) RALINK TECHNOLOGY, CORP. All Rights Reserved.
Thank you for purchasing RALINK Wireless product!
SOFTWARE PRODUCT LICENSE
The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PRODUCT is licensed, not sold.
1. GRANT OF LICENSE. This End-User License Agreement grants you the following rights:Installation and Use. You may install and use an unlimited number of copies of the SOFTWARE PRODUCT.
Ralink
我接受授權合約的條款(A)
我不接受授權合約條款(D)
列印(P)
InstallShield
< 上一步(B)
下一步(N) >
取消

**Figure 7-42: Wireless Driver License Agreement**

**Step 4:** Accept the conditions of the license agreement and click **NEXT** to continue.

**Step 5:** The **Configuration Tool Options** screen in **Figure 7-43** appears next.

**Figure 7-43: Wireless Driver Configuration Tool Options**

**Step 6:** Select configuration tool in **Figure 7-43** and click **NEXT** to continue.

**Step 7:** The **Wireless Mode Options** window in **Figure 7-44** appears.

**Figure 7-44: Wireless Mode Select Window**

**Step 8:** Click **NEXT** in **Figure 7-44**.

**Step 9:** Click **INSTALL** in **Figure 7-45** to start to install the driver.

**Figure 7-45: Wireless Driver Installation**

**Step 10:** When the installation is finished. Click **FINISH** in the termination screen.

## 7.10 KeypadAP Driver

To install the KeypadAP software driver, please follow the steps below.

**Step 1:** Select **KEYPADAP** from the list in **Figure 7-2**.

**Step 2:** A new window opens (**Figure 7-46)**. Double click the **KeypadAP v1.5.msi** to install the KeypadAP driver.

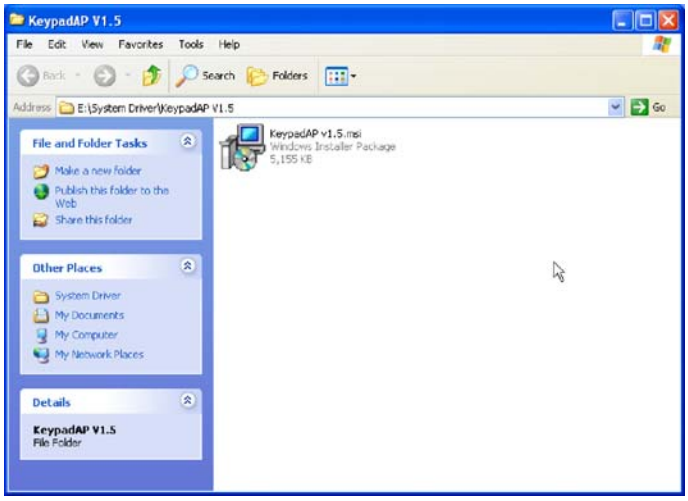


**Figure 7-46: Bluetooth Driver Icon**

**Step 3:** A welcome screen appears (**Figure 7-47**). To continue the installation process click **NEXT**.

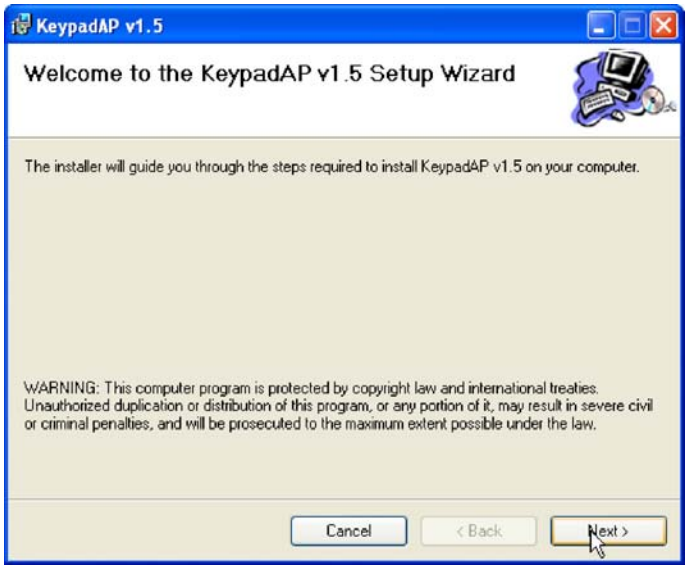
KeypadAP v1.5
Welcome to the KeypadAP v1.5 Setup Wizard
The installer will guide you through the steps required to install KeypadAP v1.5 on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

**Figure 7-47: Welcome Screen**

**Step 4:** Install wizard is ready to install the program (**Figure 7-48**). Click next to begin installation.

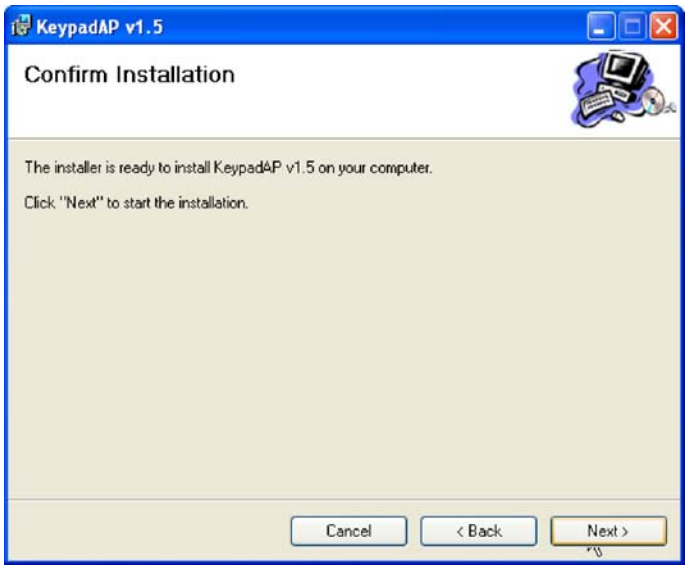
KeypadAP v1.5
Confirm Installation
The installer is ready to install KeypadAP v1.5 on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

**Figure 7-48: Ready to Install the Program**

**Step 5:** The Installing KeypadAP screen appears as the program is installed (**Figure 7-49**).

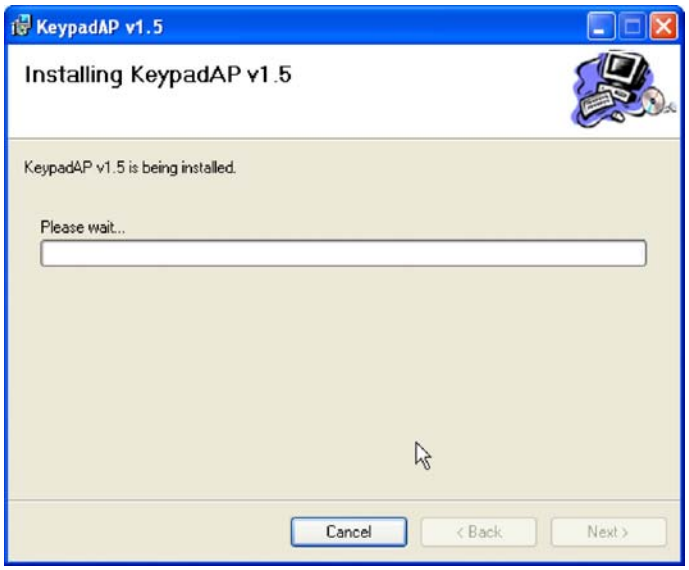


**Figure 7-49: Installing KeypadAP**

**Step 6:** When the installation process is complete, the Setup Complete screen appears. See **Figure 7-50**.

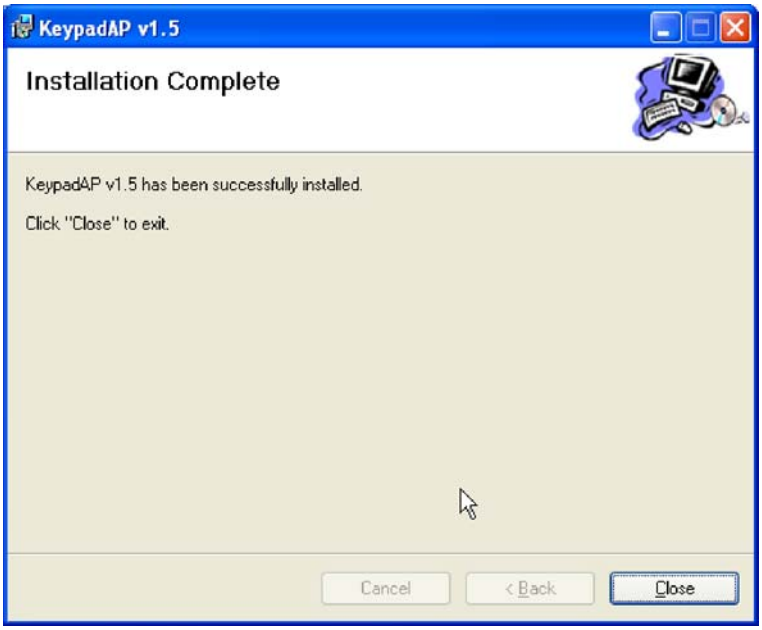


**Figure 7-50: KeypadAP Driver Complete Installation Screen**

**Step 7:** To complete the driver installation, click Close.

## 7.11 PC Camera

To install the PC camera driver, please do the following.

**Step 1:** Access the driver list shown in **Figure 7-2**. (See **Section 7.2**)

**Step 2:** Click "**WEBCOM**" and double click the "**Setup.exe**" file.

**Step 3:** The **InstallShield Wizard** is prepared to guide the user through the rest of the process (**Figure 7-51**).

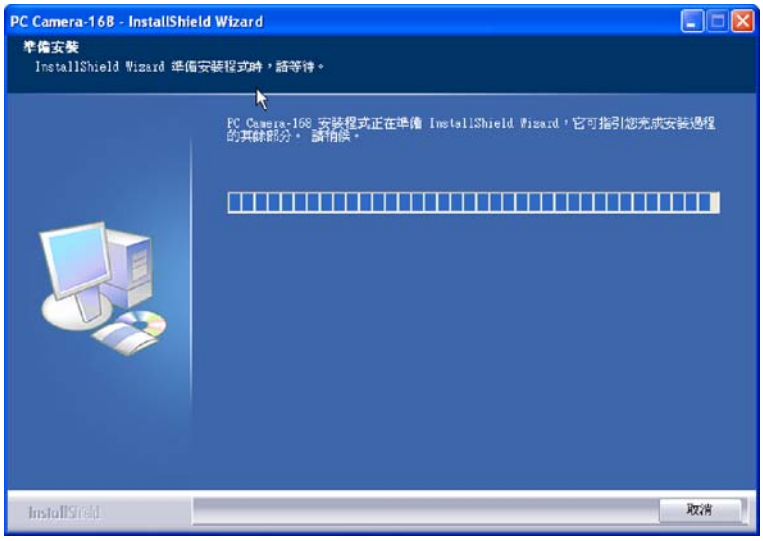


**Figure 7-51: Preparing Setup Screen**

**Step 4:** Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 7-52**).

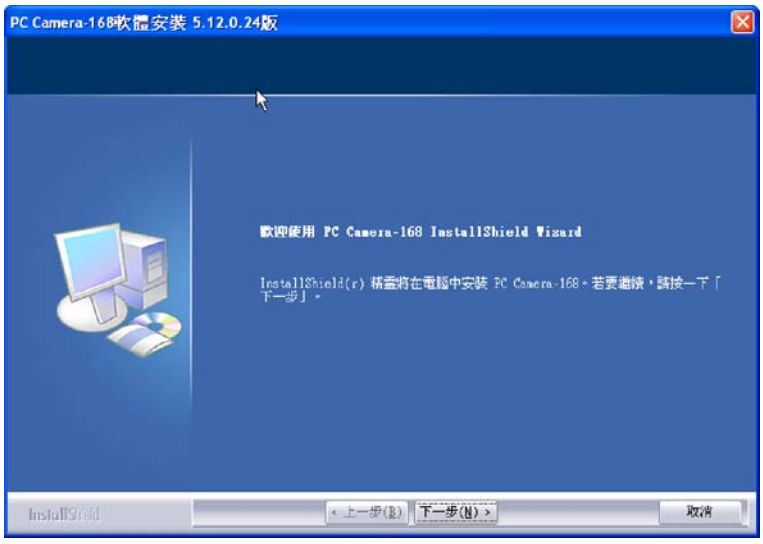


**Figure 7-52: InstallShield Wizard Welcome Screen**

**Step 5:** Click **NEXT** to continue the installation.

**Step 6:** The following Installation options screen appears as shown in **Figure 7-53**. Select the installation type and click continue.

**Figure 7-53: Installation Selection Type**

**Step 7:** The following Ready to Install window appears in **Figure 7-54**. Click Install.

**Figure 7-54: Ready to Install Window**

**Step 8:** The Installation Wizard updates the system as shown in **Figure 7-55**.

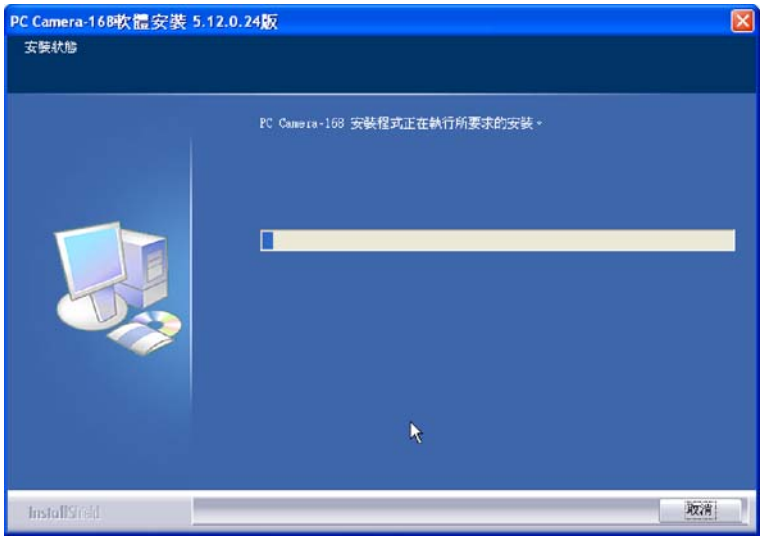


**Figure 7-55: Installation Wizard Updates the System**

**Step 9:** The follow screen may appear, click continue anyway.

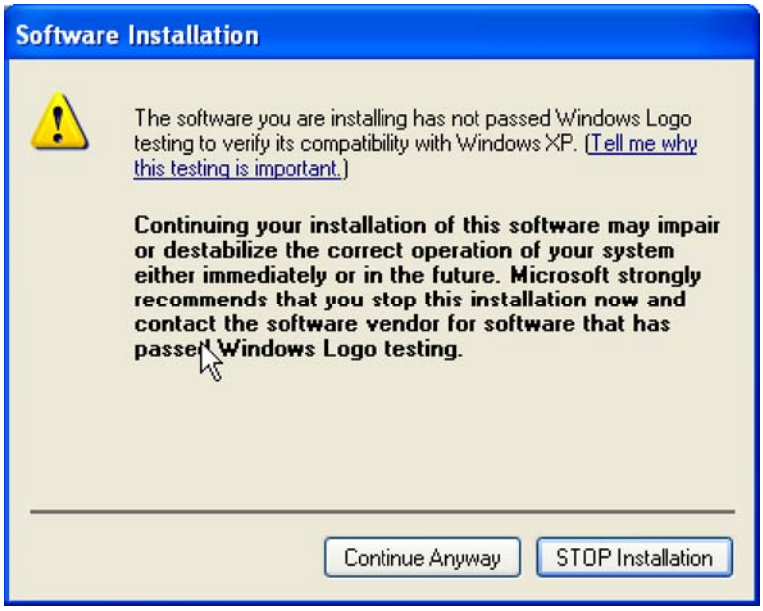
Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

**Figure 7-56: Software Installation Alert**

**Step 10:** After the driver installation process is complete, a confirmation screen appears (**Figure 7-57**).

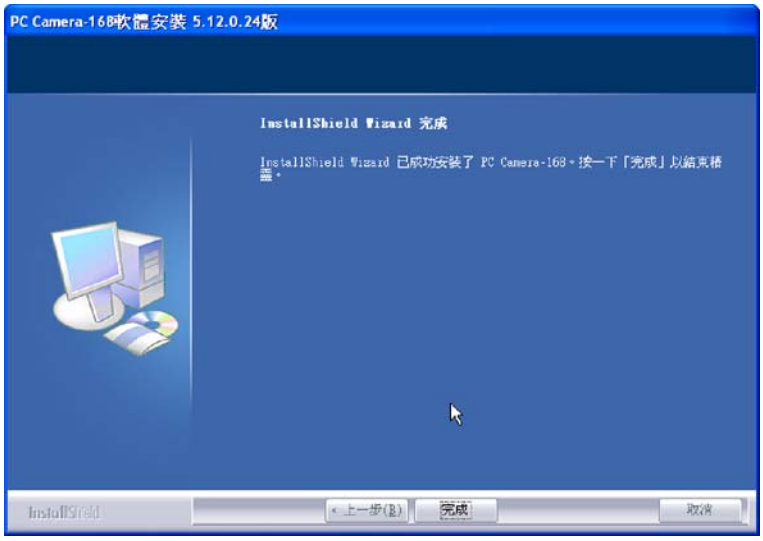


**Figure 7-57: Installation Complete**

**Step 11:** Click **FINISH** to complete installation.

Appendix

A

# Terminology

| | |
|---|---|
| **AC '97** | Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997. |
| **ACPI** | Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface. |
| **AHCI** | Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface. |
| **ATA** | The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer. |
| **ARMD** | An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives. |
| **ASKIR** | Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1. |
| **BIOS** | The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user |
| **CODEC** | The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system. |
| **CompactFlash®** | CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types. |
| **CMOS** | Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors. |
| **COM** | COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector. |
| **DDR** | Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal. |
| **DMA** | Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory. |

| | |
|---|---|
| **DIMM** | Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module. |
| **EIST** | Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage. |
| **FSB** | The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset. |
| **GbE** | Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard. |
| **HDD** | Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data. |
| **ICH** | The Input/Ouput Control Hub (ICH) is an Intel® Southbridge chipset. |
| **IrDA** | Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other. |
| **L1 Cache** | The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor. |
| **L2 Cache** | The Level 2 Cache (L2 Cache) is an external processor memory cache. |
| **LCD** | Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between. |
| **LVDS** | Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer. |
| **POST** | The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on. |
| **RAM** | Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives. |

| | |
|---|---|
| **SATA** | Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps. |
| **S.M.A.R.T** | Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives. |
| **UART** | Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports. |
| **UHCI** | The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers. |
| **USB** | The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates. |
| **VGA** | The Video Graphics Array (VGA) is a graphics display system developed by IBM. |

Appendix

B

# Watchdog Timer

**NOTE:**

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

| **AH – 6FH Sub-function:** | |
|---|---|
| AL – 2: | Sets the Watchdog Timer's period. |
| BL: | Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup). |

**Table B-1: AH-6FH Sub-function**

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur; calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

**➔EXAMPLE PROGRAM:**

```
; INITIAL TIMER PERIOD COUNTER

;
W_LOOP:
;

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT     15H

;
; ADD THE APPLICATION PROGRAM HERE
;

        CMP     EXIT_AP, 1      ;is the application over?
        JNE     W_LOOP          ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT     15H

;
; EXIT ;
```

Appendix

C

# Compatibility

**NOTE:**

The compatible items described here have been tested by the IEI R&D team and found to be compatible with the AFL-4 Series-N270

## C.1 Compatible Operating Systems

The following operating systems have been successfully run on the AFL-4 Series-N270.

- MS-DOS 6.22
- Microsoft Windows XP (32-bit)
- Microsoft Windows 2000
- Red Hat 9.0

## C.2 Compatible Processors

The following Intel® Socket 478 processors have been successfully tested on the AFL-4 Series-N270

| CPU | FSB | Frequency | L2 Cache |
|---|---|---|---|
| Intel® Pentium 4 | 800MHz | 3.2GHz | 1MB |

**Table C-1: Compatible Processors**

## C.3 Compatible Memory Modules

**NOTE:**

The memory modules listed below have been tested on the AFL-4 Series-N270 other memory modules that comply with the specifications may also work on the AFL-4 Series-N270 but have not been tested.

The following memory modules have been successfully tested on the AFL-4 Series-N270.

| Manufacturer | Model No. | Capacity | Speed | Type |
|---|---|---|---|---|
| Kingston | KVR400X64C3A | 512 MB | 400 MHz | DDR |

**Table C-2: Compatible Memory Modules**

Appendix

D

# Hazardous Materials Disclosure

## D.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

| Part Name | Toxic or Hazardous Substances and Elements | | | | | |
|---|---|---|---|---|---|---|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (CR(VI)) | Polybrominated Biphenyls (PBB) | Polybrominated Diphenyl Ethers (PBDE) |
| Housing | X | O | O | O | O | X |
| Display | X | O | O | O | O | X |
| Printed Circuit Board | X | O | O | O | O | X |
| Metal Fasteners | X | O | O | O | O | O |
| Cable Assembly | X | O | O | O | O | X |
| Fan Assembly | X | O | O | O | O | X |
| Power Supply Assemblies | X | O | O | O | O | X |
| Battery | O | O | O | O | O | O |

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (CR(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 壳体 | X | O | O | O | O | X |
| 显示 | X | O | O | O | O | X |
| 印刷电路板 | X | O | O | O | O | X |
| 金属螺帽 | X | O | O | O | O | O |
| 电缆组装 | X | O | O | O | O | X |
| 风扇组装 | X | O | O | O | O | X |
| 电力供应组装 | X | O | O | O | O | X |
| 电池 | O | O | O | O | O | O |
| O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。<br>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。 | | | | | | |